

Journal

OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

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Correspondence

April 4, 1957

Dear Dr. Aitken:

Your editorials in the JOURNAL are read with interest, and the instructions offered from time to time are followed to the best of our ability.

We agree with most of what you have to say in the April 1, 1957, issue, page 315, except that we thought elephants were quadrupeds and that they had breasts in the same region that they are found in human beings.

However, we were more startled a few years ago to learn from some drawings of Dr. Netter that some human beings have a multiplicity of mammary glands that followed a pattern of some quadrupeds.

Not having any zoo here in Goshen, I can't check on the elephant breast; and not being an M.D., I'll have to take Dr. Netter's description and pictures of human breast multiplicity.

Cordially yours,
C. Guy Stephenson,
Goshen, N. Y.

[We were reminded of this interesting letter after a trip to a zoo, so obtained permission to use it. Yes, the mammary glands of the elephant are in the *pectoral* region, but our question was "Where is the breast region in a quadruped?" Surely some members of the profession remember the draft horse and, if so, the "breast collar." There are many definitions for breast but we like Webster's definition, "the front or forward part" even in a quadruped.—ED.]

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JOURNAL OF PARASITOLOGY

U.S. Bureau of Animal Industry,
Zoological Division
Beltsville, Maryland

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in ketosis

the way it was

"This continues to be an important problem to the veterinarian in dairy cattle practice. Some years ago, it appeared to be primarily a disturbance of such a nature that the body was unable to metabolize the fats—more carbohydrate was needed, more ready energy. Many cases responded to glucose intravenously, supported by the feeding of cane molasses or corn syrup. Others responded when chloral hydrate was administered, its effects being to liberate the glycogen stored in the liver.

"There were, however, cases which did not respond to treatment of this nature, but did improve markedly when anterior

pituitary extract was injected. This still did not produce the desired result in all cases, and massive doses of vitamin A were administered. Results were spectacularly good in some cases, but dismally poor in others. When treatment can be accompanied by a change to new pasture, remarkable recoveries may be seen, but obstinate cases still occur in animals that are pasturing on lush green legumes.

"So the search for the underlying cause, and for a means of preventing or correcting the condition, still goes on."

Report of the Committee on Diseases of Dairy Cattle, R. C. Klusendorf, Chairman, J.A.V.M.A., 187:355 (Nov.) 1945.

1945

the way it is

"There appears to be general agreement among those who have studied the disease (primary ketosis) that prompt stimulation of glycogenesis or glucose therapy constitutes the most effective treatment. . . . The satisfactory response of a high percentage of cows treated with

that this is adequate dosage. Less severely affected cows may require only 50 mg. It is, therefore, effective in lower dosage than other presently available glucocorticoids recommended for treatment of ketosis."

Link, R. P., Newton, R. L., and Baker, W. B.: Paper presented at 33rd Annual Meeting, A.V.M.A., Oct. 10-12, 1950, San

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News From Washington



Legislative Action.—Compulsory poultry inspection bill S-1747 (see JOURNAL, Aug. 15, 1957, adv. p. 6), with amendments, agreed to by Senate-House conferees, passed the House Aug. 16, 1957, and was cleared for signature of the President when passed by the Senate, Aug. 19, 1957. **The President signed the poultry bill on Aug. 28, 1957;** it is P.L. 85-172. No person shall be subject to the provisions of the Act prior to Jan. 1, 1959, except under certain conditions.

The U.S.D.A. appropriations, for fiscal 1958, P. L. 85-118, includes \$57,794,-890 for all research in ARS: plant, animal disease, and pest control, \$26,082,-000; meat inspection, \$16,826,000.

Supplemental Appropriation Bill, for fiscal 1958, H.R. 9131, cleared for the President, Aug. 22, 1957. It included \$4,000,000 for ARS to begin the eradication of the fire ant and the screwworm (fire ant, \$2,400,000, and screwworm, \$1,600,000), as well as \$1,300,000 for Agricultural Marketing Service (poultry inspection).

★ ★ ★ ★

Tax Deferment.—Chairman Jere Cooper (D., Tenn.), of House Ways and Means Committee, has announced general taxation hearings to start Jan. 7, 1958. **The Jenkins-Keogh plan for the self-employed**, H.R. 9 and 10, (see JOURNAL, Feb. 15, 1957, adv. p. 16), will be among the subjects scheduled. The AVMA supports the legislation proposed in the Jenkins-Keogh bills.

★ ★ ★ ★

New Bills Introduced.—More changes in the **social security** law are proposed. H.R. 8774 (Rep. Perkins, D., Ky.) would increase earnings subject to tax from \$4,200 to \$6,000, increase benefits payable under O.A.S.I., reduce retirement age to 60, and liberalize provisions relating to disability benefits.

H.R. 8883 (Rep. Kean, R., N.J.) contained the following proposals: (1) increase the maximum earnings subject to tax from \$4,200 to \$4,800; (2) pay benefits to dependents of those receiving disability payments; (3) authorize payments from the trust fund toward rehabilitation of those now receiving disability payments; (4) increase ultimate benefits for those who continue to work after age 65 by a 1 per cent a year delayed retirement benefit; (5) increase maximum family benefits for widows and dependent children from \$200 to \$296.25 a month; (6) increase widows' benefits from 75 per cent to 80 per cent of the worker's primary insurance amount. Another major point calls for compulsory coverage of physicians.

H.R. 2903 (Rep. Dellay, R., N.J.) would provide benefits for dependents of disabled workers, authorize payment for rehabilitation services of disabled workers from the disability trust fund, and increase benefits to workers who delay retirement.

H.R. 9234 (Rep. Fogarty, D., R.I.) would reduce from 65 to 60 the age at which old-age and other monthly insurance benefits become payable.

★ ★ ★ ★

Miscellaneous.—Seven ARS veterinarians, four from the Meat Inspection Division and three from the Animal Disease Eradication Division, have been enrolled in a **training course**, under the auspices of A.E.C. and the Civil Defense Administration, relating to the over-all **problem of environmental radiation**. The course includes participation in field tests, the laboratory phases of planned tests, and evaluation of the results. After the initial tests, each of the veterinarians participating will spend a period of time, on a rotational basis, at U.C.L.A. on the A.E.C. project.

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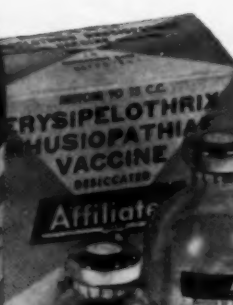
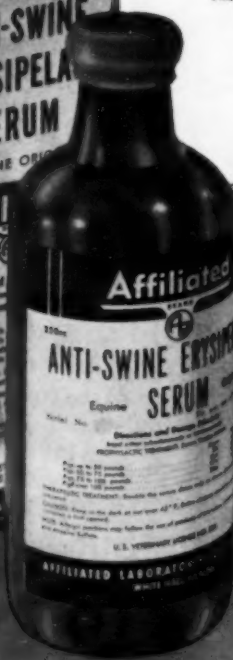
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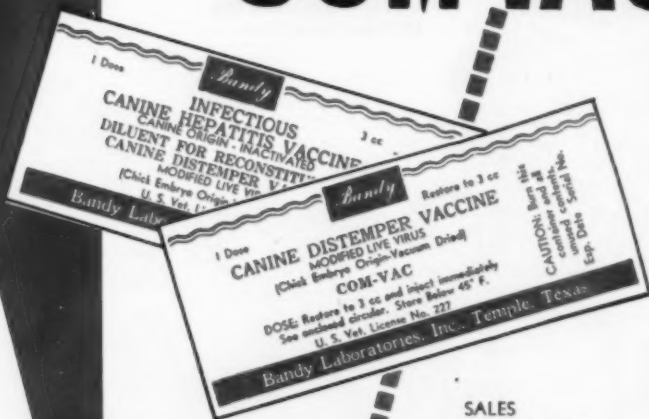
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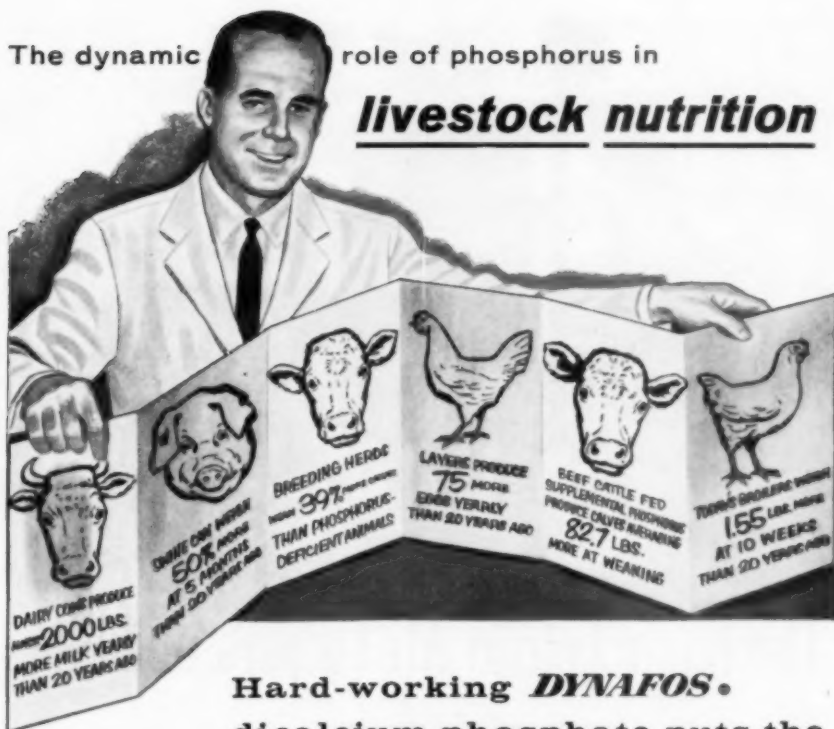
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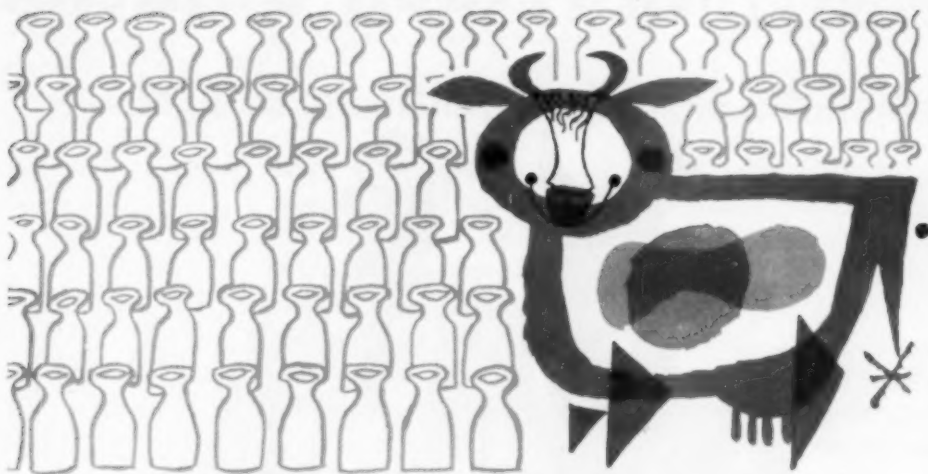
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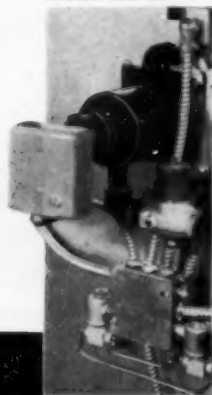
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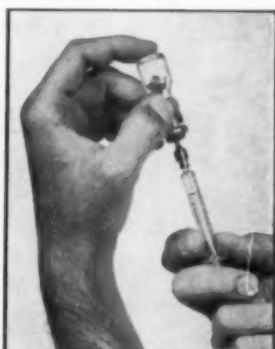
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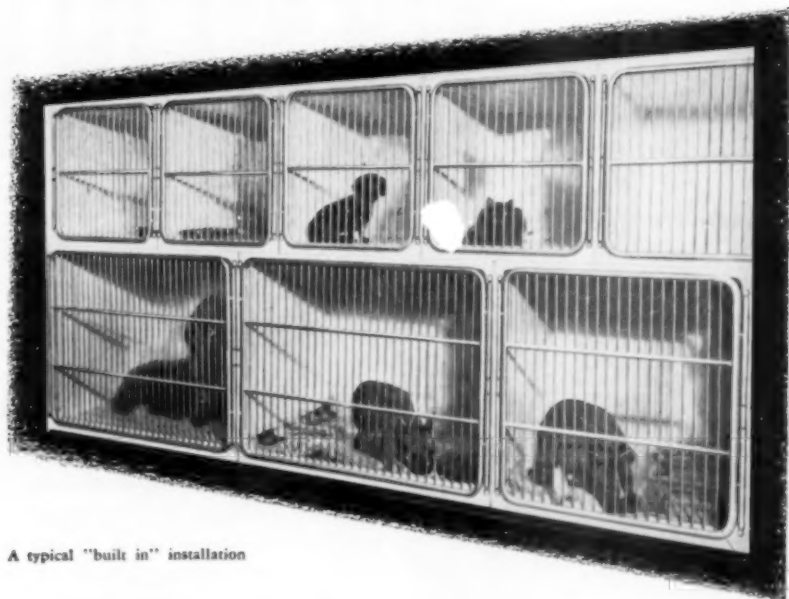
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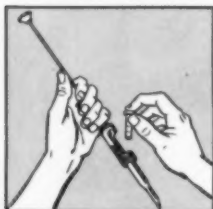
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*R. J. Deane, W. J. Van Arsdale, E. P. Reineke and L. J. Bratzler (Michigan Agricultural Experiment Station): The Effect of Progesterone-Estradiol Implants and Stilbestrol Feeding on Feed Lot Performance and Carcass Characteristics of Steers. *Journ. Animal Sci.* 15:1020, 1956.

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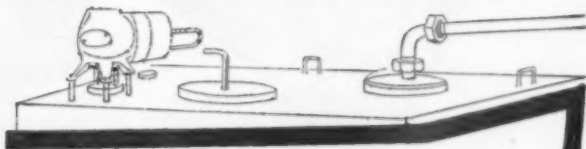
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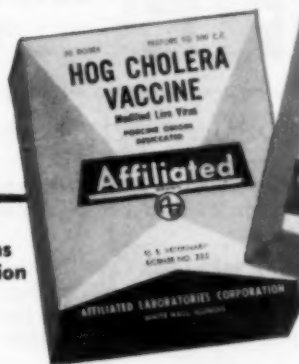


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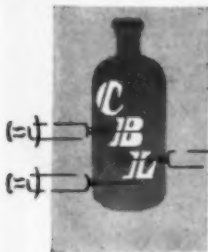
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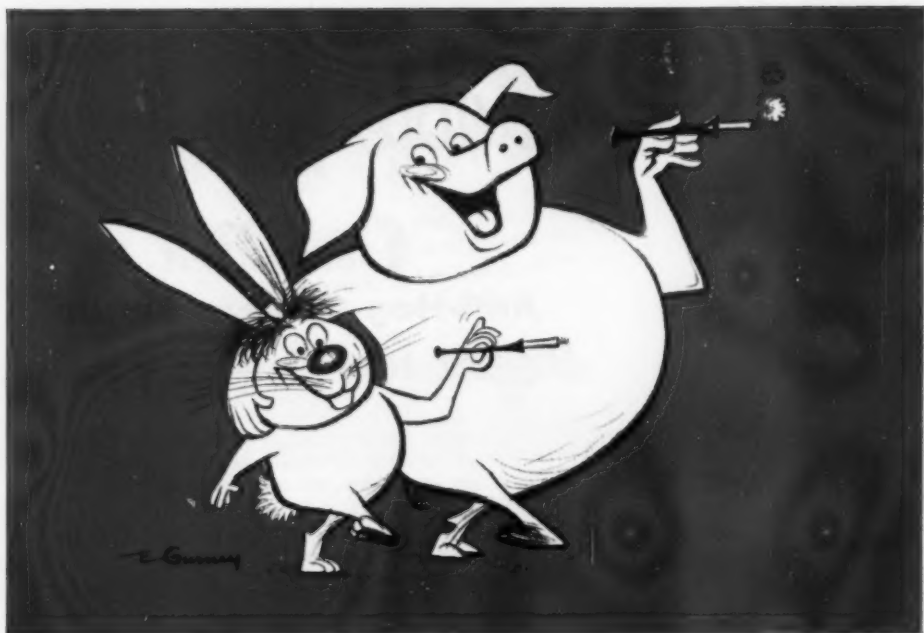
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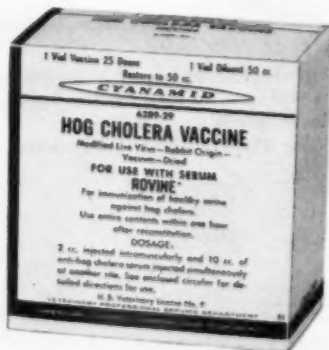
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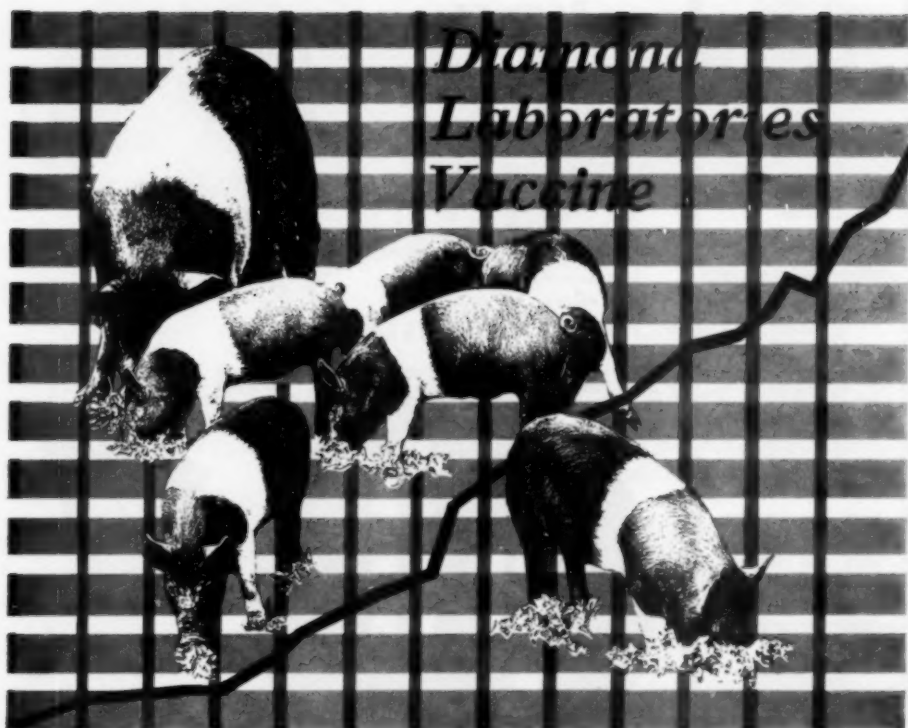
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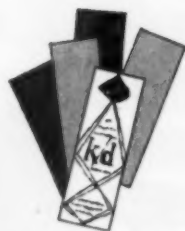
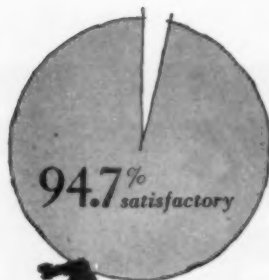


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The President's Address

Brigadier General WAYNE O. KESTER, V.C., U.S.A.F.

Washington, D.C.

MY FELLOW doctors of veterinary medicine, distinguished guests, and ladies. It is indeed a pleasure to address this, our Ninety Fourth Annual Assembly.

Part of what I have to say here today may not be pleasing to everyone. It had never occurred to me until a few moments before my election two years ago that I might one day be your president. Consequently, my approach may have been a little unorthodox and my conclusions a departure from tradition. Certainly, the assignment as your president has been an honor and a great challenge. I cherish it and I have done my best to fulfill the obligations of that office as I see them.

The most difficult obligation of that office is to analyze our Association's activities and to be constructively critical of them. This is never a pleasant task—but criticize I shall, because constructive criticism is the most valuable service your president can offer at this moment when we are so rapidly approaching a crucial crossroads in our development.

This is your Association as well as mine. It is a great Association and it can continue to be great—but you have a lot more to learn about it, and we all have a lot more to do about it and the advancement of our profession if we are to maintain our existing good position in the American society and economy.

I hope here in the next few minutes to tell you my concept of your president's job, state a number of problems confronting us, along with a proposed course of action that will help to solve some of those problems. First, however, I should like to review some of the recent accomplishments of our Association.

Delivered at the Opening Session of the Ninety-Fourth AVMA Annual Meeting, held in Cleveland, Aug. 19-22, 1957.

RECENT ACCOMPLISHMENTS

Insurance Program.—The inauguration of our new AVMA insurance program on a true-group, nationwide basis, in all of



President Wayne O. Kester delivering his address at the Opening Session of the Cleveland AVMA Meeting, August 19, 1957.

those states and provinces that desired it, has indeed been a milestone. The program is now well established and is an excellent example of what careful study, thorough planning, and organized effort can do.

Military Veterinary Service.—The recurring question as to the position of veterinary medicine in the military services is, we believe, being satisfactorily and permanently settled. Prompt action over a year ago, when the question was last raised, led to an exhaustive study by the Army, Navy, and Air Force staffs. It was immediately apparent (1) that veterinary service is an essential entity in the over-all military medical program and (2) that, if

veterinary officers ceased to function in public health and research programs of the Armed Forces, several hundred specially trained physicians would be required to replace them. This obviously would be poor economy and mal-assignment of professionally trained manpower.

The end result of our efforts, in strongly and continuously opposing this proposal to abolish the Veterinary Corps, is that a vast number of people, both in and out of the military, now have a far better understanding and appreciation of our profession and its important place in the Armed Forces organization.

Legislation.—The value of our Washington office has become more and more apparent in the handling of legislative and other relations with government agencies. This office, as well as our legislative liaison channels through the constituent associations, has been enlarged and strengthened. A total of 13 bills, believed to be in the best interest of the public and our profession, is being supported during this session of Congress. Two are being opposed. Our position on four more has not yet been determined.

I would specifically invite your attention to two legislative items. The Jenkins-Keogh Bill (HR 9 and 10) provides a tax deferment, voluntary retirement plan for the self-employed. Your Association is supporting the bill and you may wish to do so individually.

The other item has to do with coming legislation on Social Security on which your Association has not yet determined a position. It will be discussed in future issues of the JOURNAL.

Women's Auxiliary.—We are pleased to see the increasing strength and stature of our Women's Auxiliary. The latest report is a membership of 6,285. Each year, we realize more and more the value of this organization. Recently, a cooperative program in public relations has been worked out so that the Auxiliary and its components are working with us on the number one problem confronting veterinary medicine today—that of public education.

Public Relations.—The new public relations staff member who joined our headquarters a little over a year ago has greatly strengthened our effort and, during the year, about \$60,000 has been devoted to

The Opening Session of the Ninety-Fourth



public relations and education—a big step forward.

Research Fund.—The possibility of a "memorial fund," as part of the AVMA Research Fund, supported by bequests from the estates or heirs of veterinarians or others interested in veterinary science is being explored. This possibility arises from one bequest made this past year and the likelihood that others will follow. It might become a permanent part of the AVMA Research Fund and eventually a substantial part of the research fellowship program.

Also, agreement has been worked out whereby a substantial grant from a large industrial concern can be used in accordance with the fundamental objectives of the Research Fund and fellowship program.

Constitution and Bylaws.—A complete revision of the AVMA Constitution and Bylaws, especially with respect to the operation of our committee system of action, has long been needed. This has required two years of study and has been a laborious task. The final draft of the proposed revision has been considered by our House

of Representatives this past week and is ready for final enactment at Philadelphia next year.

Membership.—More than 900 new members joined our Association during the year. Our total membership on Aug. 1, 1957, was 14,569.

Headquarters Building.—The advisability of acquiring a building to house our headquarters office was studied during the year. The disadvantages appeared to far outweigh the advantages at this time. This idea should not be given up entirely. However, it is believed that the accumulation of an adequate cash reserve should take precedence over a commitment for a building debt. It is my opinion that we should direct our attention and resources to acquiring additional personnel needed for a more effective headquarters staff rather than to acquiring a building to house that staff.

THE PRESIDENT'S JOB

What does this assignment as AVMA president entail? For me, it has meant 90,000 miles of travel and 226 days away from home attending 77 meetings of vari-

Annual Meeting of the AVMA in Cleveland



ous types. These included 18 of our 19 veterinary colleges and 41 other veterinary meetings in 38 states or provinces. It required 98 prepared speeches and AVMA representation at seven nonveterinary meetings of consequence, and making addresses at two of them which were national in scope. In addition, it required more than 40 radio and television presentations, three on national networks, and news reporter interviews numbering well over 100. It also entailed handling hundreds of pieces of AVMA correspondence. It is possible that I have seen 95 per cent of all veterinary students and perhaps half of the membership during the past two years.

This routine would have been impossible had it not been for the fact that it dovetailed and could be interwoven with my regular Air Force duties.

You have indeed given me a liberal education in the affairs of our profession. However, I think this method of using your president has become a bit outmoded and that it is not the best way for an organization such as ours to use its president. When he leaves office, all the knowledge and all the education you have given him leaves with him, shortly to become a total loss. Much of what I have done during the past two years could have been done as well, if not better, by a traveling field secretary. Such a man could bring the services of, and information about, our Association to the local level and he could take back the local and state problems to the national headquarters. He could exchange ideas, gain information and experience, give continuity to our efforts, and so return a maximum on our investment in him. In fact, I believe there is need for two such men on the AVMA headquarters staff now.

I believe the energies of your president should, to a major degree, be directed toward more and better relationships with people and organizations outside the profession. That is where the prestige of his office can be used most effectively. He could and should be ably guided and assisted in this effort by our headquarters staff.

So much for your president's job. Now what are some of our problems?

PUBLIC RELATIONS

We are a little outmoded in another of our procedures—our approach to our public relations problem. We all realize there is

a problem but do we really fathom the problem so that its answer can be found?

What are we doing about it? During the past year, we spent \$60,000 on an expanded public relations and public education program, a program which cost each member the ridiculously small sum of less than \$2 of his annual dues. This effort must be further expanded and should include still another top-flight public relations man. I believe also we should arrange for the contractual services of a professional public relations consultant agency, national in scope, an agency specializing in the business of public relations for organizations such as ours.

All the foregoing might seem like the answer to our problem: the president, assisted by the headquarters staff, working on external public relations; two traveling field secretaries and your president-elect working on internal relations; and two public relations headquarters staff members plus the services of a professional public relations consultant agency.

This is but a partial answer. It leaves out the most important ingredient: that ingredient is you and me. All of the foregoing can only help us help ourselves.

We all know—must know—that good public relations for the practicing veterinarian is, in essence, just competent, courteous professional service, 24 hours a day, in his hometown or community—and letting it be known. I find in my travels that we are providing that service, but as individuals we are certainly not letting our public know about it. In fact, the average veterinarian does very little about public relations other than to provide good professional service. Each of us seems to feel that someone else will take care of our personal part of the public relations chore for us. No comparable group of individuals spends so little time, thought, and money on public relations as we do. *As we present ourselves and our services before the public individually, so does the public recognize and accept us collectively as a profession.*

It is unfortunate, in fact tragic, that the public knows so little about veterinary medicine and so little understands the contributions it makes and can make to human health and our national economy. Lack of knowledge and proper use of veterinary science is a national handicap—a handicap that only this Association can correct.

PLANNING FOR THE FUTURE

Our system of planning the future course of the AVMA is also outmoded. In fact, a system, as such, does not actually exist and herein lies the cause of most of our problems. Not only that, but this lack of planning serves as an "incubator," hatching more and bigger problems for us constantly.

At the all-important local level, we know that our prime purpose is to provide competent and courteous professional and community service every day of every year whether or not we are practitioners, teachers, or in some other walk of veterinary science. This we plan to do and are doing well. As individuals, we realize and understand the importance of planning for the future and are quite efficient at it within our limited spheres. But, collectively, on an organized profession-wide basis, we are seeing and planning very little of our future. We are absorbed in the day's events, busy just trying to keep pace. We have, in fact, been too preoccupied to even take full cognizance of all of our immediate problems, much less those on the horizon. What are some of these immediate problems?

Graduate Education and Postgraduate Training.—The time when the acquisition of the D.V.M. degree could be considered an education in itself has long since gone. In fact, no such situation ever obtained because, in truth, the D.V.M. is but a stepping stone. For the doctor, school is never out.

There is currently an urgent need for greater interest in graduate education—formal postgraduate college study leading to advanced academic degrees and board certification. Such training is imperative if we are to make progress, or even hold our own, in the world of research and education. All too few veterinarians are trained, qualified, or interested in research or teaching as a career.

We have another near-void in our educational pattern—and that is for the practicing veterinarian and other graduates who have neither the time nor the actual need for advanced degrees but who should have ample opportunities for refresher courses and other means of keeping abreast of new developments. We are erroneously inclined to conclude that our college short courses and constituent association meetings fill this void. They do, in

fact, make a significant contribution but they are still far short of what is really needed in quantity, quality, and pattern.

Last year, President Cross directed our attention to these mounting problems in graduate education and postgraduate training; a committee has since been appointed to study them. However, little has been accomplished and little will be accomplished until we provide that committee with sufficient manpower and money so that it can thoroughly evaluate the problems and develop recommendations for expanding the opportunities for postgraduate education and training. Such study and planning are long overdue.

Research Funds.—Another pressing problem is the critical shortage of qualified personnel to engage in veterinary research. It is appalling that so little money is made available for use in connection with veterinary research, especially for the training and developing of veterinary research workers. It is alarming because it is so urgently needed and it is inconceivable in this day when such vast sums are available and are being used in research less essential to the economy and security of this country.

Obviously, the interests which have, or control, the funds do not understand the veterinary picture—the needs and opportunities in veterinary research. At present, we have no good means of informing these interests or of obtaining and administering such funds. Perhaps the establishment of an AVMA board of trustees for this specific purpose might be the answer. Such a board of trustees, with long tenures of office, a permanent chairman as administrator, and the specific mission of seeking the sources of major grants for research and research training, would be a step in the right direction. I believe that eventually it would lead to the channeling of millions of dollars into essential veterinary research as compared with the small sums now contributed to our Research Fund. Until such a trust or comparable organization is established for the specific purpose of obtaining funds and training research people we, as a nation, will probably continue to pursue our present course of building large research facilities rather than training large numbers of highly competent people to man these facilities.

Pharmaceutical, Biological, and Feed In-



Dr. James R. Hay, director, Ohio Department of Agriculture, delivering the welcoming address at the Opening Session of the Cleveland AVMA Meeting.

dustries.—All three of these industries, along with the Federal Food and Drug Administration and our profession, are now at a crossroads in serving the American public.

There are marked differences of opinion as to policies and procedures in areas which involve our professional interests and responsibilities. In the public interest, these differences must be ironed out. This will require a complete re-evaluation and much realistic thinking on the part of all segments concerned.

I believe our Association should take the lead in an effort to establish a joint committee, headed by an impartial moderator, to study the entire problem from every angle. This could result in mutual understanding of some, if not all, of our problems, an appropriate sharing of responsibilities, and a situation whereby industry, government, and our profession, in joint coordinated effort, could deliver maximum benefit to the animal owners of America.

Leadership in Animal Health and Related Public Health Programs.—As a profession, we have long been quick to support all such programs. In fact, we are largely responsible for the control of bru-

cellosis, tuberculosis, foot-and-mouth disease, tick fever, and numerous other diseases. Yet, as an Association, we received little credit for such accomplishments. This is because other organizations have sparked the leadership—leadership that we could provide as well, or better, if we were organized to do so.

I believe we should establish a continuing mechanism for evaluating opportunities and evolving program patterns for the prevention of animal diseases and the promotion of animal health and related public health programs.

We should seek the responsibility and provide the leadership on all matters dealing with animal health, at the national as well as other levels, not as a policing or regulatory agency but as a scientific advisory body. If we do not provide this leadership, it will be provided by others less qualified.

United States Livestock Sanitary Association.—I recommend that consideration be given to a closer working relationship



Dr. H. E. Jensen, co-general chairman, Committee on Local Arrangements, making announcements at the Cleveland Meeting.

between the AVMA and the U. S. Livestock Sanitary Association. The function of both of these Associations is, primarily, to help our profession better serve the livestock industry and the public.

The U. S. Livestock Sanitary Association is an old and rightfully proud organization with a long record of accomplishments. So is the AVMA. The origin of both predates the turn of the century. At that time, the interests, objectives, and resources of these two associations had little in common. However, the evolution of the livestock industry and our profession during the past half century has altered this so that now there is much in common. In many instances, both associations are working separately toward the same objectives. Both associations depend upon the same resources (and often the same individuals) for scientific knowledge and guidance as well as professional and economic support. In some respects, there is already duplication of effort and perhaps unnecessary expenditures of funds and energies by the two associations.

I am not proposing a merger with the AVMA. But, speaking as a member of both associations, I do recommend and urge a joint study and action that will insure maximum and concerted efforts on the part of our entire profession in serving the livestock and related industries of America. What this joint action might entail is purely speculative.

Grievance Committees.—I believe those constituent and local associations which have already established grievance committees or have taken other steps to provide for the hearing of complaints of the public, i.e., the clients of veterinarians, are to be commended. I further believe that the time has arrived when all of our associations should give serious consideration to establishing such committees.

Status of the General Practitioner.—We have a developing problem in how to make the lot of the general practitioner, especially the large animal practitioner, economically more favorably competitive with other newer and developing areas of veterinary medicine.

There must continue to be a good economic future for those graduates who wish to enter large animal practice. This may require a re-evaluation and a new concept of the role and job of the practitioner.



Mrs. A. E. Coombs, Skowhegan, Maine, president of the Women's Auxiliary to the AVMA, delivering greetings at the Opening Session.

Perhaps our present concept of large animal practice is too restrictive to fit in with modern economics.

Perhaps we need to write a job description especially for the guidance of our new members—a composite package or description, so to speak, setting forth all the jobs and functions a practitioner might or should perform, in addition to, or in conjunction with, a large animal practice. This description should be based on the experience of many successful practitioners—a composite of jobs they have performed, assignments they have held, and opportunities they have pursued.

It should include part-time opportunities and relationship with such organizations as the U. S. Department of Agriculture, state livestock disease control agencies, state and local public health agencies, city and county functions, community-cooperative organizations, stockyards and sales barns, artificial insemination associations, breed associations, poultry practice, research institutes, schools, civic affairs, charity functions, and others.

Practitioners engage in all the foregoing and many more. All are practice builders. All add to the income of the practitioner and all benefit the community—yet it is my guess that many splendid opportunities go undeveloped simply because the local veterinarian is unaware that they exist. Some of these pertain to *services which the public demands and will have whether or not we provide them.*

At any rate, I believe we as an asso-

ciation should make every effort to study and solve this economic problem confronting our profession—a problem which, if not solved, could ultimately adversely affect the agricultural economy of our country. We all know that the sound application of clinical veterinary medicine is the very foundation for a healthy livestock industry and that without it no livestock industry can thrive.

One way for us to start would be to round up the job information I have just discussed, along with more information on the advantages of group practices, medical economics, and new concepts in the practice of preventive medicine, and to present this package of information in current form to interested members of our association and our veterinary students.

This would broaden our scope. It might alter some of our concepts and it would facilitate the widest application of veterinary medicine in practice. It would also provide a survey tool whereby an individual or an association could easily determine how complete a service coverage is being provided in any given area and lead to a better understanding and more assistance from sources outside our profession, where indicated.

WE NEED ENLIGHTENMENT

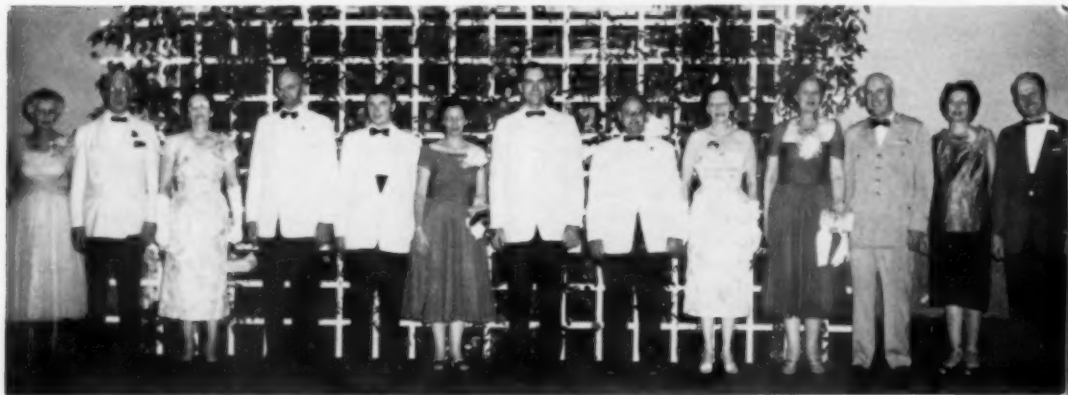
Before we can cope with our current problems and plan our future, we need to

know a lot more about ourselves—what we are capable of doing and what we as a profession should be doing and should be preparing to do in the best interests of American society and the nation's economy. As a group, we have excellent professional knowledge, but all too little knowledge about our profession. President Cross pointed out this weakness last year and urged that something be done about it. As is customary, we have "appointed a committee," but that committee has not been able to accomplish much and it will not accomplish much until we provide funds and personnel to help gather the facts.

We need to know what we have to offer the public. Even more important is how to modify and keep what we have to offer in the form most useful to the public. We have no firm ideas as to future requirements or where we are going. We have no course charted, no guideposts, no yardsticks, no stated targets, and no long-range plans. We are not shaping our own destiny. We have, by circumstances in our evolution, been forced to drift with the tide of events and hold our own as best we could, sometimes more by adjusting hind-sights than by peering through front-sights.

How has this technique and system served us in our development? It would seem not badly, because certainly the advances in veterinary science on this con-

The Receiving Line at the President's Reception—AVMA Cleveland Meeting



Right to left—Dr. and Mrs. H. E. Jensen, Dr. and Mrs. Wayne O. Kester, Dr. and Mrs. A. E. Coombs, Dr. and Mrs. W. W. Armistead, Dr. T. Lloyd Jones, Dr. and Mrs. L. H. Moe, and Dr. and Mrs. J. G. Hardenbergh.

tinient during the past half century have been fantastic and the equal of any in American society.

Yet looking through these hindsight, has it served us so well? For example, 30 years ago, in 1927, only 127 students were graduated from our ten schools. It was generally believed by many that we had too many veterinarians and too many veterinary schools. As a result, for many years when our schools should have been graduating hundreds of veterinarians annually, the output dwindled to a trickle. For more than half a century, we had served the public demand best by concentrating on equine medicine. Why? Because America was built on horsepower and the horse was almighty until machine power replaced him.

Few guessed in those days that the public would soon replace the demand for equine practice with an even greater demand for general practice, along with numerous specialties in veterinary medicine to support a thriving agricultural industry and related economy. We, like other professions, were caught in the economic crises of the 1920's and 1930's and, unfortunately, we could not convince the public and sometimes ourselves that there was a great and expanding future for veterinary medicine. I say unfortunately, because practically all of the problems confronting veterinary medicine today and many confronting agriculture could have been averted by greater vision and positive planning in those early days—more schools, more graduates, more professional development, and more and better professional service to all segments of the public. Only recently have we begun to reach into all the vacuums left by the great drought of graduates in the 1920's and 1930's.

Now are we again at a crossroads and is history about to repeat itself? There is one difference this time. Vast numbers within our ranks, as well as the public in general, have great confidence in the future of veterinary medicine. Witness the new and expanding veterinary colleges, new research facilities, commercial expansion, and veterinary hospital construction. Where do we as an association and profession fit into this future and how do we guide our own destiny?



Chairman of the Board T. Lloyd Jones congratulates President and Mrs. Kester following presentation of the Service Scroll at the Cleveland AVMA meeting.

SPECIFIC KNOWLEDGE NEEDED

Here are some of the things that must be known and we, as an organization, should find out.

First, what will the field of veterinary medicine encompass ten, 25, and 50 years from now? Where and how much can and should it broaden in scope? In spite of our past rapid evolution, it is a good guess that we are only beginning the real expansion and development of veterinary science and medicine.

Second, how many veterinarians should we have to do this job and how should they be trained? How should their general education in veterinary medicine be shaped to fit the future? How many and what specialized areas will there be? How many veterinarians should be in these specialties and how and where can they best be trained for such specialization? What will it take to do the job ten, 25, and 50 years hence?

Third, what are our present resources and can they provide sufficient people adequately trained to meet these future requirements? If not, what should be done? How many more schools and training institutions do we need and what should they be teaching? A vast revolution is now taking place in the practice of veterinary medicine and it is bound to continue to take place. In view of this, are we teaching and preparing to practice veterinary medicine as it is and was a few years ago, or are we preparing to practice veterinary medicine as it will be ten and 20 years hence?

Fourth, what is needed in the way of research—not just in the area of veteri-

nary medicine alone but in conjunction with other sciences as well? What are the research problems that should be pursued in order of their importance, and what will it require in the way of facilities and people to pursue these problems?

We must not lose sight of the fact that veterinary research in a true sense is not a veterinary problem. It is a national, a public problem both in Canada and the United States. It is our responsibility as a profession to provide the leadership in pointing out to the public what these problems are, along with methods of solution.

There is no coordinated, long-range national research plan. Our country has been guided by scares and pressures rather than sober evaluation and judgment. For example, we have recently completed the world's finest research center for foot-and-mouth disease. I think this is splendid, but I am not at all sure foot-and-mouth disease is our most serious disease threat; in fact, I suspect that there are others posing an even greater threat that are receiving much less attention simply because they have not yet reared an ugly head on the public's horizon.

In short, we should know and tell the public what is needed in the way of veterinary research and why it is needed, with the expectation that with the support of an informed public we can accomplish the research task confronting our two countries.

All this points up the immediate and

impelling need for us to establish a means whereby we can and will continue to intelligently plan our future and shape our destiny, not only in our own best interests but in the best interests of our country.

WHAT DO WE DO NOW?

All the problems I have enumerated are, in fact, symptoms—symptoms of growth and the problems of a growing profession and, if we are to continue to grow, we must take heed of these symptoms now—and treat them now. All this requires more people, a bigger staff, and more funds which, in turn, means an increase in our annual dues to at least \$25.

We have too long depended upon the generosity of dedicated people within our ranks and on our staff in conducting our business affairs. We have grown and the time has come when we must hire and pay people accordingly to carry on our business for us.

This may come as a surprise but we are, in fact, operating a half-million dollar business on a shoestring, with little reserve and no means for expansion or growth. All sources of revenue except dues have increased markedly over the years. Your dues provide only about 40 per cent of the total revenue used in running your Association. Obviously, we are away out of line and dues must be increased substantially even if we are to maintain our present posture with no consideration for prog-

The AVMA-sponsored dinner for student chapter and auxiliary delegates was held on Monday night, August 19, in the Cleveland Hotel.



ress in the future. Your Association is receiving mounting pressure and increasing demands for services to the membership. We have a great potential for these services and they are needed but they can not be provided without cost. Obviously, an increase in dues is a must if we as a profession are to progress and hold our position on the national scene.

Now, I should like to review in brief what has transpired here in our business meetings during the past week. It has indeed been inspiring and gratifying. There has been a splendid atmosphere of alertness and teamwork. Your House of Representatives and your Executive Board have acted favorably and with enthusiasm on a great many recommendations—recommendations which have evolved from many sources. Taken as a whole, they form a program blueprint for real progress—a program which will solve many of our problems if vigorously pursued. Following is a review of the principal items.

SUMMARY OF RECOMMENDATIONS

1) *Public Relations.*—a) That two additional veterinarians be appointed to the AVMA staff to improve liaison with constituent associations, especially by providing a traveling field secretary-type service and a permanent secretarial service for AVMA councils and committees.

b) That another staff member, trained in public relations work, be added to the headquarters force and that the services of an outside public relations consultant agency be continued as needed.

c) That a study be made to evaluate the efficiency of all aspects of our present public relations program.

d) That distinguished guests from other professions and groups be invited to attend AVMA meetings.

e) That youth organizations such as 4-H clubs, science fairs, and others be included as desirable contacts in our public relations program.

f) That AVMA-prepared and other exhibits on veterinary medicine be used more widely in reaching lay audiences.

g) That a syndicated newspaper column be developed.

b) That attempts be made to have AVMA members included on more nonveterinary programs.

i) That our internal public relations program be expanded, with particular attention to the dissemination of technical information and news on new products and techniques.

2) *President's Report.*—That the president be required to report to the Executive Board and the House of Representatives early in the first session on each occasion they meet.

3) *President's Handbook.*—That a handbook be prepared setting forth responsibilities, activities, and other information which would be helpful to the president and president-elect.

4) *President's Job.*—That the Association's workload on your president be made less de-

The Musicarnival was held Tuesday evening, August 20, where the "Song of Norway" was sung in the famous theater-in-the-round 12 miles out of Cleveland.



manding and that active contacts with outside groups be regarded as a major function of the president.

5) *House of Representatives Digest*.—That a digest of action taken by the House of Representatives be prepared as soon as possible for use of delegates in reporting to their constituent association.

6) *State Association Handbook*.—That a handbook be prepared for the assistance of constituent associations in conducting meetings and other affairs, including liaison with the AVMA staff.

7) *Student Chapters*.—That better liaison be established and more AVMA speakers be provided for student chapters.

8) *Research Journal*.—That consideration be given to the publication of the *American Journal of Veterinary Research* on a bimonthly basis.

9) *District Meetings*.—That district meetings sponsored by the Executive Board be encouraged and that reports of proceedings of these meetings be given wider distribution.

10) *Veterinary Schools*.—That the schools of veterinary medicine make use of a committee of practicing veterinarians in an advisory capacity.

11) *Headquarters Staff*.—That instructions to the headquarters staff be revised with a view to having senior members function more in a planning and advisory capacity rather than strictly in a secretarial capacity.

12) *Editorial Staff*.—That an additional assistant editor be placed on our editorial staff.

13) *Research Funds*.—That an AVMA trust be established, or our existing board of trustees be revised, for the specific purpose of obtaining grants from industry, foundations, and other sources for our veterinary Research Fund and fellowship program.

14) *Allied Industries*.—That our Association take the lead in establishing a joint committee with the pharmaceutical, biological, and feed industries in an effort to resolve problems of mutual interest and responsibility so that all may better serve the public interest.

15) *Leadership in Disease Control and Health Programs*.—That means be established whereby our Association will provide the leadership in animal disease control and animal health and related public health programs.

16) *United States Livestock Sanitary Association*.—That a joint study be made with U.S.L.S.A. to explore the advisability of closer working relationship between our two organizations.

17) *Grievance Committees*.—That constituent and other associations be encouraged to establish grievance committees to hear complaints from the public.

18) *Large Animal Practitioner*.—That we attempt to find a solution to the developing economic problem confronting the large animal practitioner.

19) *Graduate Education and Postgraduate Training*.—That plans and means be developed whereby (1) more veterinarians will pursue graduate study leading to advanced degrees and (2) more and better postgraduate refresher training is made available to all veterinarians.

20) *Future Planning*.—That necessary knowledge and information be obtained and a means be established whereby, we as an Association, can and will continue to intelligently plan our future and shape our own destiny in the best public interest.

21) *Finances*.—That our annual dues be increased to at least \$25 a year in order that the foregoing recommendations can be implemented.

CONCLUSION

In conclusion, it has been traditional for your retiring president to make recommendations for your officers to consider during the ensuing year. That pattern was changed this year.

Your officers and delegates here in business session were fully aware that little can be accomplished within our present limited financial means and with our limited staff. In fact, the mere act of expansion throws an added burden on our already overloaded headquarters staff.

They were fully aware also of the urgency for action. They chose to strike out boldly by calling for your president's recommendations at the beginning of their deliberations and acting favorably upon all of them, thus translating them into action a full year earlier than would otherwise have been possible.

Consequently, I have but one remaining recommendation. That is that we, the membership, vigorously support this program and action taken by our elected officers.

And now, ladies and gentlemen, it has been a privilege and a pleasure to serve you as your president-elect and president during the past two years.

It has been a great privilege also serving and representing you in the uniform of the U. S. Army and the U. S. Air Force during the past 24 years. As you know, I retire as your president this week and I retire as chief of your Air Force Veterinary Service next week. But I shall never retire from active participation in veterinary medicine.

You have indeed given me a world of experience and a liberal education on the affairs of our profession and I fully intend to make that training and experience available to serve you so long as I shall live.

Unanswered Public Health Problems

L. E. BURNEY, M.D.

Washington, D.C.

THE VETERINARY medical profession has a long and distinguished history of professional service. This history abounds with contributions—many of them of major importance—to the public health. So it gives me a special pleasure to meet with a group whose goals and aspirations are so closely related to ours.

You well know, of course, that veterinary medicine is important to human as well as to animal health. You also know the wealth of opportunities now open to the veterinary profession. The age of automation—of machines driven by other machines—has by no means diminished the significance of veterinary science. Quite the contrary. The modern veterinarian is needed in so many places and in so many kinds of jobs that his services are in greater demand than ever before.

The developments in veterinary public health in the last few decades illustrate the growth that has taken place. Veterinary public health has grown in size as well as in stature. It was just a decade ago, for example, that the Public Health Service established, on a formal and continuing basis, its veterinary public health program. Although veterinary services were used before that time on problems of milk and food sanitation and in some research areas, it was not until then that the veterinarian became an integral member of the modern public health team. The control of animal-borne diseases which are transmissible to man depended upon the special skills and competencies of the veterinary profession.

Today, veterinarians in the Public Health Service are still exercising leadership and contributing technical services in diseases communicable from animals to man. In addition, however, they are applying valuable insights to many other fields—such as the chronic diseases and environmental health.

The expansion of veterinary public

health services in state and local agencies has been equally striking. Ten years ago, only two or three state health departments had veterinarians on their staffs. Today, more than two thirds of the states are using the services of veterinarians in their public health programs.

UNANSWERED PROBLEMS

You have asked me to talk today about unanswered problems in public health. "Unanswered" problems, as you well recog-



Surgeon General Leroy E. Burney

nize, are not necessarily synonymous with new problems. Nor are they exclusively related to new fields of health. We have, for example, come a long way in communicable disease control and environmental sanitation. But these tasks are far from finished. They require steady effort to keep us where we are, and special effort to move forward.

Sanitary conditions on many farms and in many small towns, for example, are even today far below the standards we accept as a nation. People living in unhygienic rural areas account for much of the diarrhea and the typhoid fever that occurs in the United States. With the wealth of

Presented at the Opening Session, Ninety-Fourth Annual Meeting of the American Veterinary Medical Association, Cleveland, Ohio, Aug. 19-22, 1957.

Dr. Burney is Surgeon General, U.S. Public Health Service, Department of Health, Education, and Welfare, Washington, D. C.

technical knowledge on hand, this important job has not yet been done.

We have, on the other hand, acquired some entirely new health problems, or those unappreciated in the past. The rapid growth of cities and the almost incredible expansions of industry have posed tremendous problems to all the nation's health workers. Problems of water supply and water pollution have taken on entirely new dimensions as thousands of new chemicals are discharged into our streams. Air pollution and radiation protection have become problems of major health significance.

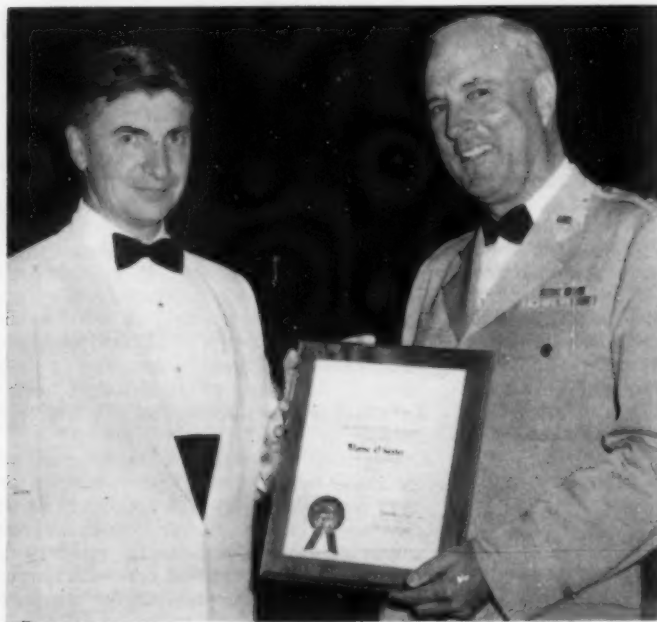
Our population has increased at a far more rapid rate than could have been anticipated a generation ago. Moreover, the population has grown proportionately older—more than 14 million people are now 65 or over. And we are a people on the move. Our expanding metropolitan centers are engulfing areas which were recently rural, and creating difficult problems of land use, sanitation, housing, and health services and facilities.

ROLE OF VETERINARY PROFESSION

The veterinary profession has an important place in the solution of these prob-

lems. Consider, for example, the environmental health problems related to atmospheric pollution with the waste products of modern industry. Animal studies can and are contributing a great deal of new knowledge about pollutants and their effects. The precedent for the use of animals as sentinels against air pollution was set in the traditional use of birds in mines to detect the presence of poisonous gases. Veterinarians are exploring a number of ways of using animals in studying pollution and the effect of by-products of nuclear reactor plants. In the Public Health Service, veterinarians are investigating the effects of smog on small animals—those that are much shorter lived than man but that live close to him and under similar conditions.

In the continuing campaign to control the communicable diseases, the veterinary profession has been the able ally of the public health and medical professions. We are indebted to the veterinary profession for the fact that bovine tuberculosis among man is now a rare disease in the United States. The job of controlling human tuberculosis is farther from completion. While tuberculosis death rates have declined sharply in the last decade, numbers



Retiring President Wayne O. Kester (right) receives the Service Scroll from Dr. T. Lloyd Jones, chairman of the Executive Board.

of newly reported cases remain obstinately high. We still have much to discover about preventing tuberculosis. In this connection, you are no doubt aware that the tuberculin skin test, which has been the keystone of your control work, but was considered impractical for wide-scale testing of human population, is now coming into broader use in finding human tuberculosis in many areas of the country.

We have long worked together, too, on the problem of brucellosis, and the 1,500 cases reported each year are enough to keep us from complacency. Your emphasis in recent years on the control of brucellosis is a good harbinger of progress. We are enthusiastically with you in your determination to eradicate this disease within the next five years.

In the group of diseases for which we have practical control measures, I think you will agree that we should include rabies. Probably one of the greatest single items of the budget of most local health agencies is devoted to dog control and anti-rabies vaccination. The fact that rabies has appeared in many other animals—and in the bat population of previously nonendemic areas of the United States—creates a new problem for the veterinarian.

Disease organisms that are pathogenic

for both animals and man have a tenacious hold in the world. In spite of available antibiotics, control of the ubiquitous *Streptococcus* and *Staphylococcus* is a continuing problem—in the dairy barn as in the infant nursery. The *Salmonella* organisms, which have caused a steadily increasing number of cases of human illness in the past ten years, affect a broad spectrum of animal hosts as well. Many cases of arthropod-borne encephalitis are reported every year in horses, birds, and man. Cases of psittacosis in man, which used to be an oddity, are now measured annually in the hundreds since the reservoir has broadened to include many other species in addition to the psittacine birds. Q fever has now been reported from a dozen or more states and appears to be worldwide.

These are all diseases against which you in veterinary medical practice and we in public health would do well to make a common cause. Careful diagnosis of both human and animal cases, laboratory identification of causative organisms, and epidemiological investigation of outbreaks and cases will provide a basis for curbing their spread.

A major problem in communicable disease control is concerned with newly discovered diseases and new strains of old

Dr. W. W. Armistead (right) was installed as president of the AVMA by Chairman of the Board T. Lloyd Jones.



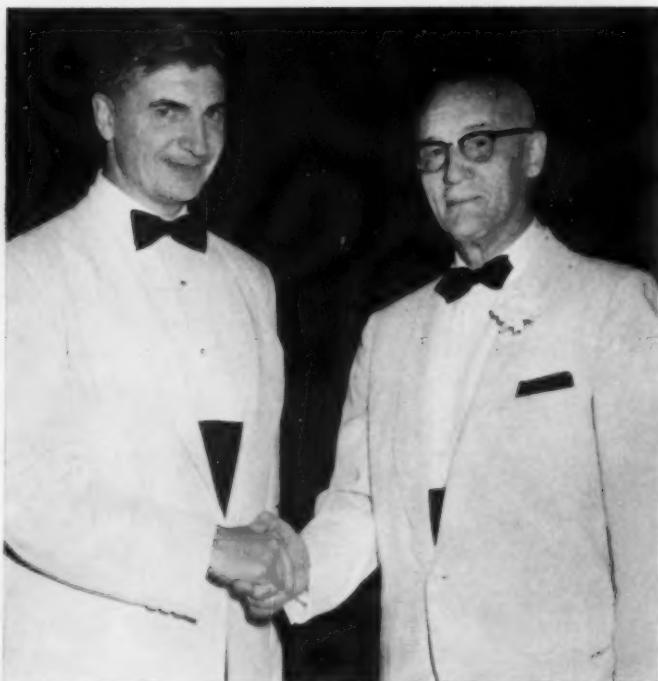
infections. Certainly the current problem we face in this country with respect to Asian influenza is within this realm. Here too, veterinarians have an important role to play. Health authorities are very much interested in getting more definitive information on the relationship between animal and human influenza.

Most investigators believe that the 1918 influenza pandemic spread from man to swine. It is well known that the virus causing swine influenza is antigenically related to the virus causing human influenza. There have been recent reports that human influenza antibodies have been found in swine and horses. The World Health Organization has asked veterinarians throughout the world to cooperate in a study to determine whether animals are experiencing any of the epidemic which has already swept through great portions of the world. Veterinarians from 25 countries will collect serums from horses and swine both before and after an epidemic in man. These will be tested and analyzed for influenza antibodies at the WHO influenza centers. The center for the

Americas is located at the Montgomery, Ala., virus laboratories of our Communicable Disease Center. Certainly, here is a real opportunity for veterinarians to contribute new knowledge in a problem area that has baffled scientists and health workers for many decades.

Probably the greatest opportunities, however, can be found in the chronic diseases. Public health programs in the chronic diseases are getting under way in many communities. These programs consist largely of prevention of certain diseases, of retarding the progression of others through early detection and diagnosis, and of mitigating their effects through rehabilitation.

Much work needs to be done in each of these fields and in perfecting the application of new techniques and procedures. In addition, considerable research—of a basic, clinical, and applied nature—is called for. Such research has expanded greatly, in government laboratories as well as in universities and private research centers. I am sure much of it is known to you, since



Dr. R. E. Rebrassier of Ohio was installed as president-elect by Board Chairman T. Lloyd Jones.

many of the problems are common to both veterinary medicine and public health.

In the field of heart and vascular diseases, for example, there is a need for comparative study of these diseases in animals. A number of cardiological research projects are now under way in various veterinary medical research centers in the United States. Some of these are supported by research grants from the Public Health Service. Among the projects under study are the extent of atherosclerosis in dogs; the anticlotting mechanism of various animals which prevents thrombosis; and attempts to simulate rheumatic heart disease in dogs. If veterinary science can gain an understanding of the mechanism which prevents experimental heart failure in dogs, this can contribute a great deal to the management of rheumatic disease and its complications in man.

Practically every type of malignancy found in man is encountered in animals. This provides opportunity for epidemiological studies of naturally occurring diseases. Some of these diseases behave in a pattern similar to that in man, while others differ. Leukemia in birds and cattle, for example, seems to show an epidemic pattern. The reported break-through in avian leukemia, with the use of a new immunizing agent, is being watched with increasing attention. The development of these agents can permit research workers to expand their studies on the prevention

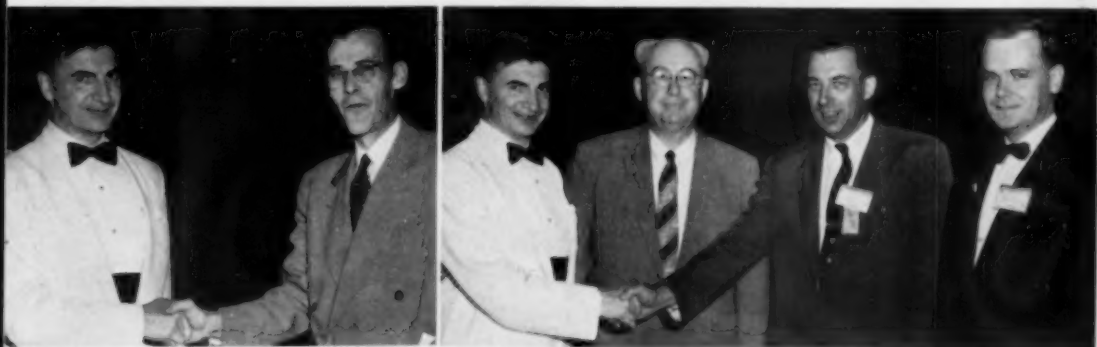
and treatment of certain forms of cancer under controlled conditions.

As you know, the problem of the aging in our country today is being viewed with increasing concern—by health workers as well as by other groups. How can we extend and enrich the active life of the aging? That question encompasses a host of inter-related problems.

The basic answers must be sought in better understanding of the biology of aging. The complex nature of the problems of aging, the multiplicity of scientific disciplines involved in their study, and the relative scarcity of trained scientists to work in this field, have absorbed our attention in the Public Health Service.

Here, indeed, is an emerging field of great promise for the veterinary profession. The study of factors influencing the aging process in animals will add greatly to our knowledge of aging in man. An increasing number of scientists are planning to launch studies in comparative medicine, to include all species of animals in the study of the aging process.

As you know, research in aging must be sustained and long-range. In plans to augment our own research efforts in the field of aging, the Public Health Service is assisting in the establishment of several large regional research centers operated by universities. We inaugurated the first of these, as some of you may know, at Duke University three weeks ago through



Left—Chairman Jones installs Dr. H. E. Kingman Jr. (right) as treasurer of the AVMA.

Right—Three of the vice-presidents were installed by Chairman Jones: left to right—Dr. W. D. Castleberry, Alabama (Zone 3); W. T. S. Thorp, Minnesota (Zone 1); and Martin P. Hines, North Carolina (at Large). Drs. M. H. Jacobs, Maryland (Zone 2) and Charles J. Parshall, California (Zone 4) were not present at the installation.



Retiring president, Mrs. A. E. Coombs (left) installing incoming president, Mrs. L. H. Moe.

the approval of research grants totaling a little over \$300,000 for the first year.

Such centers for research in aging visualize large-scale and integrated studies, utilizing the skills and knowledge of a variety of disciplines. Undoubtedly, veterinary medicine would have a place in a comprehensive research program on the problems of aging. Veterinary research centers can contribute a great deal to such a cooperative effort, especially where there are medical centers on the same campus.

CONCLUSION

I could go on with further examples of work related to your professional field and of ways in which the veterinary profession is contributing to our health goals. I know each of you could cite numerous examples from your own experience. Nor have I mentioned other health areas which I know are of importance to you—such as mental

New Officers of the Women's Auxiliary Installed at the President's Reception During the Cleveland AVMA Meeting



secretary, Blandinsville, Ill.; Mrs. A. W. Eivers, secretary, Salem, Ore.; Mrs. T. S. Maddox, third vice-president, Greenville, Ky.; Mrs. Lewis H. Moe, president, Stillwater, Okla.; Mrs. J. I. Cornwell, second vice-president, Asheville, N. Car.; Mrs. E. E. Leasure, first vice-president, Manhattan, Kan.; Mrs. Frank R. Booth, recorder, Elkhart, Ind.; Mrs. E. A. Woelffer, president-elect, Oconomowoc, Wis.; Mrs. Alfred E. Coombs, retiring president, Skowhegan, Maine.

health, accident prevention, and the distribution and organization of health services.

I would like to close, however, with a reminder of the teamwork that is necessary in our mutual professions and of the heartening way in which you in the veterinary medical profession have responded to modern challenges. Public Health has always required a variety of professional skills, specifically adapted to solution of broad problems. You have supplied one of those skills in an increasing number of public health activities.

As members of a health profession, you are in a key position to improve the well-

being of your community. In a very real way, your offices and clinics constitute a route to national health progress. In your daily activities—on farms and in industries, in your clinics and offices—you have contact with the public on health matters. This gives you the opportunity to assist in the support and development of essential community health services.

The nation's health services will work with you to enhance your role in the prevention of disease and in health research and training. And the community looks to you for special skills in the protection of human as well as animal life. It is this



So that members may better understand how the AVMA functions in their behalf, an exhibit—AVMA IN ACTION—was displayed for the first time at the Cleveland Convention.

The exhibit was located in the Public Auditorium with the commercial and scientific exhibits, and an AVMA staff member was in attendance to answer questions.

The exhibit is available to AVMA constituent associations for annual meetings. Arrangements may be made by writing to the AVMA office in Chicago.

kind of understanding and teamwork—at all levels and among all professional groups—that can bring us nearer to our health goals in this country.

The 1957 Humane Act Award

For her efforts in nursing a badly injured young deer, Myra Allena Lockhart, 14, Mountain Grove, Mo., was named winner of the 1957 AVMA Humane Act Award. Miss Lockhart was awarded a \$100 U.S. Savings Bond in addition to the official national citation for humane work on behalf of animals.

The 10-day-old fawn, which the girl aided, was badly hurt when hit by a car on June 16, 1956, and was taken to the Conservation Commission agent at Mountain Grove. The agent called Miss Lockhart in accordance with her request to take care of any crippled birds or animals brought in.

The deer, called "Laddy," now is at the University of Missouri Research Center and is being



Miss Myra Allena Lockhart and the deer she befriended.

used for special wildlife studies. Special certificates in recognition of other outstanding acts of kindness toward animals also were presented by the Association to the following:

William L. Becker, Lake Worth, Fla.; Carolyn Innis, Kidder, Mo.; Rollin Walter Roach, Chicago, Ill.; Leroy and Arthur Ludwig, Reynoldsburg, Ohio; Ross Curley, Jr., Chicago, Ill.; Edward Lee Briggs, Chillicothe, Texas; Nancy Louise Konen, Hastings, Neb.; and Nelda Mattson, Fertile, Minn.

Dr. Rebrassier Chosen President-Elect at Cleveland

Dr. Russell E. Rebrassier, assistant dean of the College of Veterinary Medicine, Ohio State University, was chosen president-elect of the AVMA at the Ninety-Fourth Annual Meeting at Cleveland, August 19-22. He succeeds Dean W. W. Armistead, who was installed as president.

Dr. Rebrassier was born July 27, 1890, in Louisville, Ohio, where he received his preliminary schooling. He graduated from the Canton Actual Business College in 1909, then enrolled at Ohio State University, Columbus, where he earned his D.V.M. degree in 1914, and his M.S. degree in 1925.

After a year with a commercial antitoxin laboratory, Dr. Rebrassier returned to his alma mater in 1916, and has served on the faculty there for over 40 years. He served as chairman of the Department of Veterinary Parasitology from 1945 to 1955, as secretary of the College of Veterinary Medicine from 1948 until now, and as assistant dean since 1955.

Dr. Rebrassier has had a notable career in association service. He was secretary of the O.S.U. Veterinary Alumni Association and editor of its quarterly publication. He has been secretary of the Ohio State V.M.A. since 1954 and served in the same capacity from 1929 to 1946. He was president of the Association in 1949.

Dr. Rebrassier has been a member of the AVMA since 1920 and has held many important Association assignments. He was elected to the AVMA Council on Education in 1951, and has served as its secretary ever since. He also is a member of the National Board of Veterinary Examiners, and since 1955, he has been the delegate from Ohio to the AVMA House of Delegates.

Dr. Rebrassier is the author or co-author of 32 published articles on veterinary parasitology. He is a member of Sigma Xi, the National Scientific Honorary Society, and of Phi Zeta, the Honorary Veterinary Society. He is treasurer of the National Council of Alpha Psi Fraternity.

He married Belle Spencer Paulin in April, 1915. They have one married daughter.

Parasitic Bronchitis in Adult Cattle in Ontario— A Case Report

D. J. CAMPBELL, M.R.C.V.S., and G. D. WETHERILL, B.Sc., M.R.C.V.S.

Guelph, Ontario

THIS PAPER describes a recent outbreak of bovine asthma near Guelph, Ont., Canada, in which the causal agent was established as *Dictyocaulus viviparus*. The condition closely simulates that described by British workers as parasitic bronchitis in adult cattle.^{4,9}

A differentiation is made between typical and atypical parasitic bronchitis.⁹ The typical form usually occurs in calves where the *D. viviparus* worms develop to adults in the bronchi, and pathogenesis is usually due to blockage of the bronchi. Coughing is characteristic, and diagnosis is usually made on finding the larvae in the feces and pharyngeal swabs. The atypical form occurs mainly in adult cattle; commonly, only immature worms are found in the bronchi, with larvae rarely found in pharyngeal swabs and feces. This phenomenon is attributed to inhibition of the development of worms in resistant animals.⁹

The atypical form can be further divided into the acute and mild types. In the acute type, there is severe dyspnea, and coughing may be absent. The animals pant and show anorexia; death may follow. The mild type is manifested by characteristic coughing, mild dyspnea, loss of flesh, and fall in milk yield. Auscultation reveals characteristic emphysema of the dorsal areas of the lung and edema with consolidation of the lower parts. Various degrees of these conditions may occur at the same time in different individuals in a herd. Peristalsis may often be arrested.⁴

HISTORY

On Nov. 7, 1956, a practitioner* informed us that he had been called to examine a herd in which all the milking animals had been coughing since about September 10 and, since the end of October, had been losing flesh and showing a decline in milk yield. No temperature above 102 F. had been observed. The young stock were unaffected. The cows had been treated with hemorrhagic septicemia bacterin but had shown no improvement. The most seriously affected animal was sent to the Ontario Veterinary College for observation and diagnosis.

*From the Ontario Veterinary College, Guelph.

*Dr. E. H. Webster, Oshawa, Ont.

Apart from 2 animals bought in the spring, the herd was self-contained. No similar condition had been encountered in previous years in either young or adult stock.

The herd was again visited on November 15, when milking animals had been housed for about ten days. They were coughing intermittently, and several were in poor physical condition. Auscultation of these animals revealed lung conditions similar to those in the cow under observation. The pregnant cows seemed to be the least affected. They had not lost flesh, but had shown a cough and an increased respiration rate for about two weeks. All animals were eating normally, and the quality of the fodder was good. The average milk production by mid-November had fallen from 780 to 546 lb. per day.

Fecal samples and laryngeal swabs were taken from each animal. Of 28 fecal samples, only one showed the presence of *D. viviparus* larvae. All the swabs were negative.

The bull, 1 dry cow, and the young calves, which had all been housed during the summer, were unaffected. The yearling heifers, which were still on pasture, were in good condition but were coughing.

At night, the herd had been grazing on a permanent pasture (Ladino clover, brome, timothy, and alfalfa) and, for 12 days prior to the onset, had been on a field from which a hay crop had been taken in July. Effluent from barnyard manure drained onto this field. Both fields had been heavily top dressed with chemical fertilizer in September, 1956.

EXAMINATION OF AFFECTED COW

The Holstein-Friesian cow, 4 years old, was emaciated but bright and active. She had lost about 200 lb. since the onset of the condition.

Her respirations were shallow (60 per min.), and auscultation revealed areas of emphysema and fairly large areas of consolidation at the lower borders of each lung. There was no nasal discharge. The cow had intermittent spasms of coughing and held her head low and extended, with the tongue protruding. Her temperature was 101.6 F., pulse 60, and appetite normal. In 24 hours, she produced 42 lb. of milk.

No evidence of *Dictyocaulus* larvae was found in fecal samples or pharyngeal swabs, but there was a low level of gastrointestinal helminthiasis.

The blood picture showed: hemoglobin,

10.85 Gm./100 cc.; leukocytes, 10,000/cmm.; neutrophils, 37 per cent; band cells, 7 per cent; lymphocytes, 37 per cent; monocytes, 4 per cent; eosinophils, 15 per cent. Some immature neutrophils were present.

After being under observation for one month, the cow showed little change in condition. She continued to eat well and maintained an average of 40 lb. of milk a day.

Since recovery of larvae from pharyngeal swabs and from fecal samples is unreliable,⁹ a lung biopsy was taken on the left side through the sixth intercostal space by surgical means on Nov. 23, 1956. Recovery from the operation was satisfactory.

Histopathology.—Microscopic examination of the lung tissue (fig. 1 and 2) revealed that the changes were confined mainly to the bronchioles and peribronchial tissues. There was a bronchiolitis with exudation of fluid into the lumen. Epithelial, inflammatory, round, and polymorphonuclear cells were evident in this area. Adjacent to the bronchioles, there was an increase in lymphocytic tissue; congestion

and edema of surrounding alveoli, with infiltration of chronic inflammatory cells; and many eosinophils. The remainder of the section showed slight edema and thickening of the alveolar walls. There were large areas of emphysema. No larvae were detected on section.

Parasitological Findings.—In a Baermann test,⁸ using a small part of the biopsy material (about $\frac{1}{2}$ -in. cube), 8 immature, living worms identical with *D. viviparus* were found, each about 7 mm. in length. These findings suggested that the condition resembled that described as parasitic bronchitis of adult cattle.⁴

Pasture Sample.—Random samples of vegetation from both fields the cattle had grazed showed high infestation of *D. viviparus*. As no effective treatment is known, the owner was advised to maintain a good level of nutrition and housing.

DISCUSSION

The summer and fall of 1956 were exceptionally cold and wet. These conditions were ideal for the development and survival

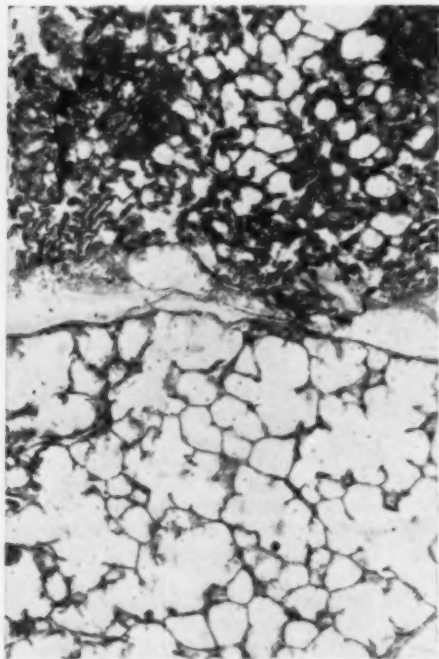


Fig. 1.—Section of cow's lung showing areas of emphysema and edema. $\times 60$.

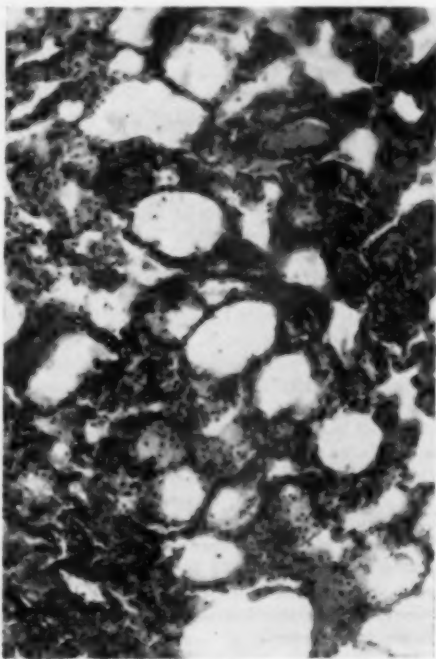


Fig. 2.—Enlargement of edematous area shown in figure 1.

of *D. viviparus* larvae, which are not resistant to desiccation and require a temperature under 80 F. for development.⁹ Furthermore, it is recognized that rich, lush pastures predispose to diarrhea which favors rapid dissemination of larvae from subclinical carrier animals.⁴ In this herd, coughing in many animals occurred about 12 days after introduction to a field of lush pasture on which, in our investigations, a high infestation of *D. viviparus* larvae was found on the vegetation.

In the course of experimental work with *D. viviparus* infection in cattle, pulmonary edema and emphysema had been produced on numerous occasions and immature worms found at necropsy.³ It was suggested that the condition possibly was an allergy. The normal complete life cycle of *D. viviparus* in the host is less than three weeks,⁶ yet immature worms were found in the lungs of adult cattle which had been housed for over eight weeks.⁸

In the case described, minute, immature worms were found about 19 days after the affected animals were housed and at least two months after the onset of the disease.

The signs and lesions in this condition were similar to those described in a number of reports of pulmonary emphysema in North American literature.^{1,7,8}

Pulmonary emphysema occurs mainly in the fall, seven days to three weeks after cattle are moved from dry pasture to pastures where there is abundant new grass. It affects cattle of both sexes; however, older animals, especially milking cows, are most affected.² This disease has been attributed to a number of agents such as *Clostridium welchii* infection,^{1,7} phosphorus deficiency, calcium phosphorus imbalance in the soil, alkaline water, and protein allergy. Most authors, however, agree that the condition closely resembles a severe allergic condition.

The disease has been described⁷ as occurring mainly in cattle on pasture; the signs in the acute type being those of acute dyspnea; the temperature is usually normal; peristalsis is either arrested or slow and feeble; and mortality is 5 to 35 per cent. The mild form was believed to be essentially the same disease but less severe and with no dyspnea. This condition was believed to occur especially when there was heavy rainfall and rapid growth of pasture forage. Histologically, it was de-

scribed as characterized by an extensive rupture and collapse of the alveoli with little normal tissue remaining. The alveoli contained varying quantities of a serous exudate and, in some areas, a slight polymorphonuclear infiltration was present. The bronchi contained a little serous exudate. The interlobular connective tissue was edematous.

SUMMARY

1) Parasitic bronchitis in an Ontario dairy herd is described.

2) Signs of the disease appeared 12 days after the herd was turned into a lush pasture on which effluent from the barnyard drained.

3) Only lactating cows were severely affected.

4) The condition resembled "acute pulmonary emphysema" as reported by various North American workers.

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Ringworm in Cattle.—A survey in northern Britain, of 30,766 cattle in 518 herds, revealed ringworm (*Trichophyton verrucosum*) in 2.89 per cent of the cattle and in 25.7 per cent of the herds. Calves were more frequently affected (7.34%) than adults (0.43%). The incidence was not influenced by season, by nutrition, by lighting or dampness of the sheds, or by the presence of lice on the cattle. On the infected farms, 28 persons had active ringworm lesions.—Vet. Rec. (July 13, 1957): 678.

Distemper in the American Raccoon (*Procyon Lotor*)*

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D. M. BROOKS, B.S.

Indianapolis, Indiana

A DISTEMPER complex in wild carnivores (gray foxes, raccoons, skunks) simulating clinical rabies has been described.¹ Published serological and cross-immunity data²⁻⁴ indicate that the infective agent in each of the susceptible species is antigenically identical with that of the canine distemper agent. Other data^{5,6} suggest that canine distemper may bear some relation to a respiratory disease in man.

In Indiana, the raccoon population has increased appreciably in the past ten to 15 years. These animals have provided both sport and financial gain for many night hunters and trappers. During 1955, approximately 115,000 raccoons were taken. The total value of pelts alone (av. \$1.96) was approximately \$225,400. In addition, many of the carcasses were sold for dog food or for human consumption.

The number of sick and dead raccoons found in the Willow Slough Game Preserve in northwestern Indiana late in 1955 indicated a disease of epizootic proportions in that area. The unusual clinical behavior of several of these sick animals suggested the possibility of rabies. However, many animals which did not show nervous manifestations associated with rabies also died. Only 2 of 37 raccoons submitted to the U. S. Public Health Laboratory, Indianapolis, during 1956, were positive for rabies. It may be assumed that a majority of those submitted exhibited clinical signs of disease.

The purpose of this report is to present: (1) a geographical survey of reported disease in raccoons in Indiana; (2) the results of studies of sick raccoons made available during 1956 by the Indiana Conservation Department; and (3) the results of antigenic protection tests using an infectious agent isolated from each of several sick raccoons, and a single strain, egg-

adapted canine distemper vaccine (Virovax).†

SURVEY

It was not possible to obtain specimens from all counties in which diseased raccoons were seen. Fear among the local citizens of contracting rabies, or some other disease, prevented the capture of large numbers of clinically sick raccoons. Postmortem decomposition prevented laboratory examination of many of those found dead. Thus, suitable specimens were obtained from only 18 counties. The raccoon population has been noticeably reduced in some areas of the state due to disease, whereas total population in other areas still appears to be relatively unaffected.

Questionnaires were sent to all state conservation officers in an effort to determine where sick raccoons had been seen in Indiana during the years 1953 to 1956. The number of counties in which diseased raccoons were seen, and the total number of counties reporting were: in 1953, 33 of 78; in 1954, 42 of 83; in 1955, 35 of 90; and in 1956, 54 of 92. The individual counties reporting sick raccoons for the year 1956, together with the counties from which diseased raccoons were obtained for laboratory examination, are shown (fig. 1). Distemper was diagnosed in 1 or more animals from each of the 18 counties from which sick raccoons were obtained.

RESULTS OF LABORATORY EXAMINATION

A total of 32 raccoons or their tissues were examined. Each raccoon had exhibited one or more of the following clinical signs: abnormal social habits, emaciation, ocular and nasal discharge, chorea, blindness, paralysis, and other nonspecific neurological disturbances.

Histological studies were made of the major visceral organs and brain of each animal and, wherever possible, microbiological, hematological, and parasitological examinations were performed. A histo-

*From the Pathology Research Laboratories, Pitman-Moore Company (Robinson and Newberne) and the Indiana Department of Conservation (Brooks), Indianapolis, Ind.

†The authors thank Alice Whalen, Mary Ellen Weidlich, Rubie Lindley, Gayle Nicksch, and the various conservation officers for their assistance with this study.

*A survey with notes on experimental transmission and antigenic protection tests.

†Pitman-Moore Co., Indianapolis, Ind.

logical diagnosis of distemper was based on the demonstration of distemper-type inclusion bodies in one or more organs, with or without other alterations associated with the disease (*viz.* demyelinating encephalitis; virus-type pneumonia; epithelial hydropic changes).

Distemper was diagnosed histologically in 24 (75%) of 32 raccoons. Among the 24 diagnosed as having distemper, 16 (62.5%) had a virus-type pneumonia, often accompanied by giant cell formation, and 6 (25%) had a virus-type encephalitis commonly associated with distemper. In 2 animals, lesions were limited entirely to the central nervous system. Primary toxoplasmosis was diagnosed in 1 and concomitantly with distemper in a second. Encephalitis of undetermined origin, meningitis, and parasitism, respectively, were diagnosed in 1 each. Bronchopneumonia was the apparent cause of death in 2, while the cause of death in 2 others was apparently due to trauma.

Variation among the individual hemograms precluded significant correlation of these data with other findings. The icterus index of 8 raccoons with distemper varied from 1.0 to 10.7 units. Cultures of the major visceral organs of 25 raccoons yielded *Streptococcus* from 3, *Pasteurella* from 2, *Proteus* from 2, and *Pseudomonas* from 2. Gross examination of 25 raccoons for the presence of internal parasites revealed *Ancylostoma* in 4, *Toxocara* in 7, *Taenia* in 7, *Physaloptera* in 15, and *Capillaria* in 3.

EXPERIMENTAL TRANSMISSION AND ANTIGENIC PROTECTION TESTS

Inoculums were prepared from tissues of naturally infected raccoons as follows: R_1 from the brain of a raccoon showing distemper lesions limited to that organ and R_2 from a raccoon with lesions limited to the viscera. The R_7 inoculum was prepared from liver and spleen of a ferret previously infected with R_1 . In each instance, the inoculum was prepared in a 10 per cent suspension, large particles were removed by centrifugation, and antibiotics were added in the amount of 500 units of penicillin and 10 mg. of streptomycin per milliliter. The inoculum were quick-frozen and stored at -70°C . until used.

The raccoons and muskrats used for animal inoculation tests were immature ani-



Fig. 1.—Map showing counties in Indiana which reported sick raccoons for the year 1956, and counties from which diseased raccoons were obtained for laboratory examination.

mals trapped in their natural habitats. The dogs were raised on isolated farms and the ferrets were raised commercially under a controlled environment. The animals in each species were allotted to two groups and those in one group were given egg-adapted canine distemper vaccine (the same dose as given to dogs) 12 days prior to challenge.

RESULTS

The inoculums (R_1 , R_2 , R_7) were used to challenge both vaccinated and nonvaccinated animals by various routes. Clinical examinations, temperature recordings, and hemograms were made daily, beginning on the eighth postinoculation day. Laboratory studies were made on each animal which developed clinical signs (fever, leukopenia, anorexia) and which became moribund or died. Those which did not develop clinical

TABLE 1—Results of Inoculation of Raccoons, Ferrets, Dogs, and Muskrats with Material from Raccoons Showing Histological Lesions Identical with those of Canine Distemper

Animals	No. challenged	Inoculum*	Animals developing distemper	
			(No.)	(%)
RACCOONS				
Vaccinated*	3	R ₁	0/3**	0
	3	R ₂	0/3	
	2	R ₁	2/3	
Controls	3	R ₂	3/3	100
FERRETS				
Vaccinated	3	R ₁	0/3	0
	3	R ₂	0/3	
	3	R ₁	3/3	
Controls	3	R ₂	3/3	100
DOGS				
Vaccinated	2	R ₁	0/2	0
	3	R ₂	0/2	
	2	R ₂	2/2	
Controls	2	R ₁	2/2	100
MUSKRATS				
Vaccinated	2	R ₁	0/2	0
	1	R ₂	0/2	
	2	R ₁	0/2	
Controls	1	R ₂	0/1	0

*Vaccinated 12 days prior to challenge with egg-adapted canine distemper vaccine.

**No. developing distemper / No. inoculated.

†R₁ = infected raccoon brain suspension; R₂ = infected raccoon liver and spleen suspension; R₃ = spleen suspension of a ferret infected with R₁.

signs were killed and similarly examined 28 days after challenge.

The infectious agent from raccoons was consistently pathogenic for nonvaccinated raccoons, ferrets, and dogs (table 1). No signs of disease were observed in any of the animals which had previously been vaccinated with egg-adapted canine distemper vaccine. Both vaccinated and non-vaccinated muskrats were apparently refractive to infection when challenged with identical inoculums. With any one inoculum, the incubation period for raccoons and ferrets varied from nine to 14 days. Histological lesions consistent with distemper were demonstrated in each of the non-vaccinated animals, but no lesions were observed in the animals previously vaccinated. The nonvaccinated dogs showed only minimal clinical signs, yet clearly defined inclusion bodies were demonstrated in the stomach, urinary bladder, renal pelvis, and lungs of each animal. No clinical signs or histological lesions were observed in the previously vaccinated animals, all of which were killed 28 days after inoculation.

SUMMARY

An epizootic disease occurred in raccoons in northwestern Indiana in 1955. During 1956, the disease, in less than epizootic proportions, was reported in 54 of 92 counties. Laboratory examination of ill or dead raccoons from 18 counties resulted in a histological diagnosis of distemper in 24 of 32 (75%). A variety of miscellaneous diseases accounted for the remaining 8 (25%).

The results of experimental transmission and cross-protection tests, using both previously vaccinated and susceptible raccoons, ferrets, and dogs, indicate that the agent of raccoon distemper isolated in this study and that of canine distemper are antigenically identical. Muskrats were refractive to infection with distemper virus.

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Aftosa Eradication Pays.—In the past four years, in Belgium, where foot-and-mouth disease (aftosa) control was attempted by vaccination without eradication, the disease has appeared in 4,000 herds and has been constantly present. In the same period, in the Netherlands, with a heavier cattle population, the disease has appeared 430 times but was immediately eradicated each time. Vaccination is also extensively used there. Likewise, in Denmark, where aftosa is controlled both by vaccination and eradication, it appeared 112 times in the four years (caused 27 times by an accident of vaccination).—*Off. Internat. des Epizoot. Bull.* 47, (March, 1957): 265.

An Isolation Brooder for Raising Disease-Free Pigs

NORMAN R. UNDERDAHL, M.S., and GEORGE A. YOUNG, D.V.M.

Lincoln, Nebraska

CONSIDERABLE INTEREST has been manifested during recent years in the isolation of pigs at birth for the control of swine disease in herd repopulation studies.^{1,2,4,7} Pigs free of disease have been raised in single pig isolation units^{2,6} or in open cages in semi-isolation rooms. However, when pigs are in open cages, 1 sick pig can expose the entire pig population in the area. While greater control of infection is possible if the pigs are maintained in single isolation units for the first week, these are not desirable for longer periods, especially with an early change to a dry diet as planned in a repopulation program.

An enclosed brooder unit for successfully raising pigs from 1 to 5 weeks old is here described. The brooder is in itself a large isolation unit supplied with its own filtered air system. This feature permits the housing of several units in a semi-isolation room without danger of cross infection. Each unit is equipped for the feeding of both liquid and dry diets. Water is made available in a continuous flow fountain. The labor and time required for the isolated care of the pigs is kept at a minimum. The construction cost of the brooder unit is relatively low.

BROODER SPECIFICATIONS

The brooder unit (fig. 1 and 2) is designed to adequately hold 12 pigs up to 4 to 5 weeks of age in isolation and correspondingly fewer pigs for longer periods. The basic frame of the brooder (fig. 3) is made from angle iron and galvanized sheet metal. The legs are constructed from 1 1/2-inch angle iron and are connected by welding the 3/4-inch angle crossies, forming a box framework. The drainage floor has a three-way slope toward the back and center of the unit. A standard 1 1/2-inch sink trap is used. The floor, which is placed within the lower crossies, and the front, back, and side panels are soldered in position. These panels are flanged over the top crossies. A frame of strap iron (1/8 by 1 1/2 in.) reinforces the feeder and the

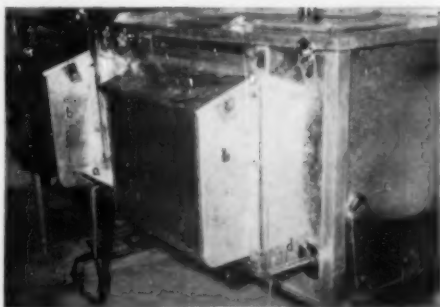


Fig. 1.—Exterior of brooder unit showing water fountain (a), with overflow hose, dry feeders (b), pipe (c) for pouring milk into trough, and the rod (d), with cross pin, which supports the front end of the trough.

water fountain openings to stabilize the side panel and, therefore, improve the air seal. The unit is equipped with leveling screws on all four legs.

The interior of the brooder is divided into two equal compartments by a solid metal partition. This partition forms a tee angle at the top to support the adjacent edges of the two covers, and extends to the frame which supports the screen floor. Fresh air, which enters through the filter in one of the covers, passes through the screen floor, under the partition, and is exhausted through the cover on the other side. This air circulation prevents an accumulation of carbon dioxide. An area 3 by 4 inches is cut in the partition to permit the water fountain to service both compartments. The heavy screen floor which carries the pigs is supported by a 3/4-inch angle iron frame riveted to the four wall panels 2 inches above the lower crossies. This floor screen is 1/2-inch stainless steel mesh made with 1/8-inch wire, and requires no extra bracing.

The cover (fig. 4, a) is made in two sections with the edges flanged to give more rigidity. Each section of the cover is sealed with a gasket of 5/16 by 1/2-inch sponge rubber weather stripping and is tightened in position with four (3 1/2-inch) trunk hasps. The cover sections each have a hinged service door which contains a plate glass observation window. The door is sealed with 5/16- by 3/8-inch weather stripping and is secured with a standard round window lock. One cover section has the incoming air filter (fig. 2, e) which consists of a 6- by 24-inch No. 50 FG spun glass filterdown* pad supported on 1/2-inch hardware cloth (welded to the cover) and held in position by a frame. The

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*American Air Filter Co., Louisville, Ky.

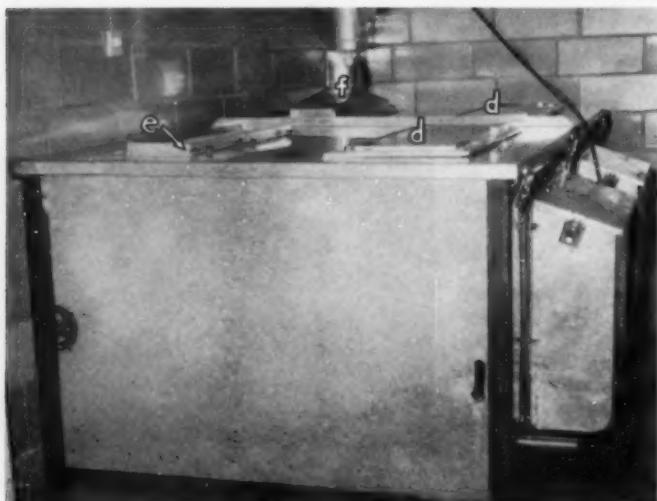


Fig. 2—End view of brooder unit; note service doors (d) containing observation windows, incoming (e), and exhaust (f) air filters.

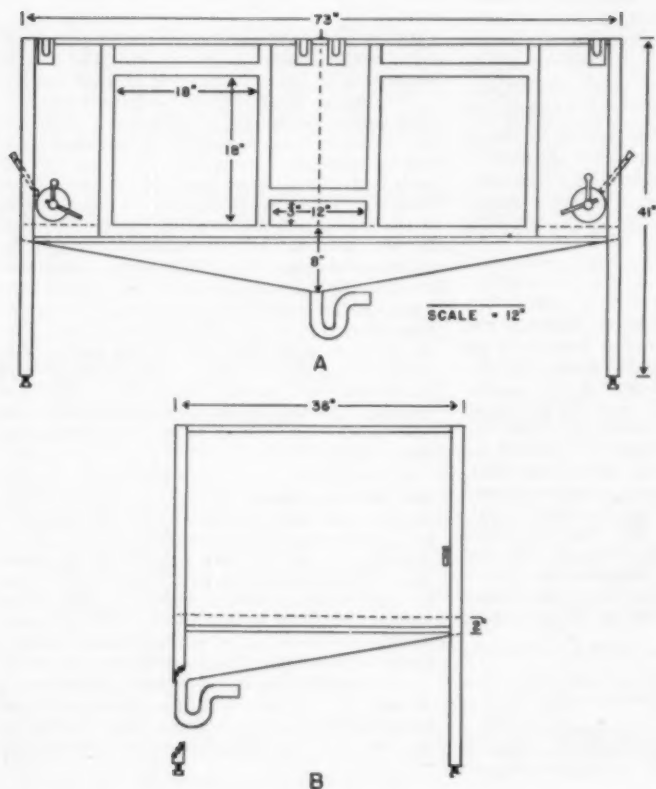


Fig. 3—Detailed sketch of brooder showing: (A) front view and (B) end view.

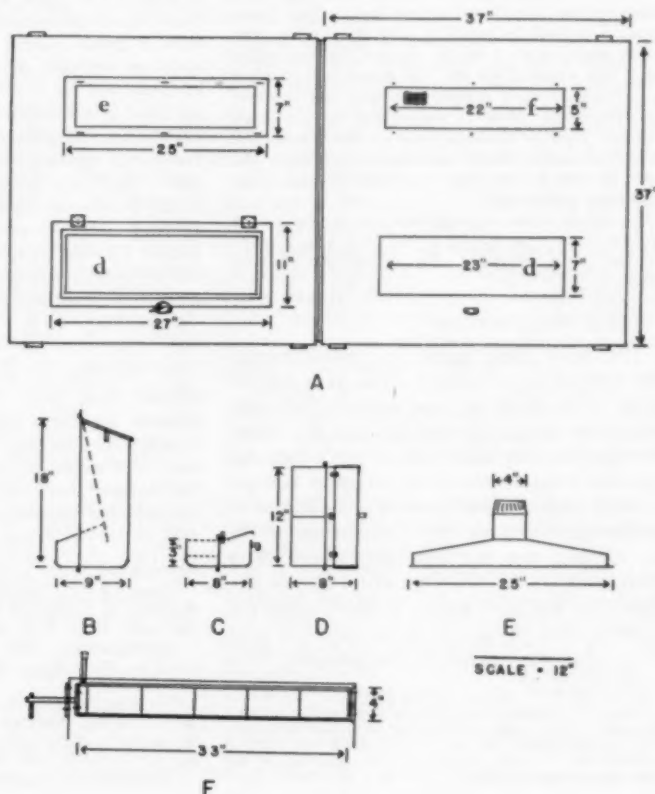
exhaust stack on the other cover (fig. 2, f) has a 6-by 24-inch No. 25 FG spun glass filterdown* pad supported on 1/2-inch hardware cloth. The exhaust stack connects through a manifold to the air intake of a squirrel cage blower (fig. 5) which moves air through the brooder under negative pressure. When the pigs grow older and larger, the exhaust filter pad is removed to permit greater air circulation. The exhaust stack (fig. 4, E) has a 1/2-inch screen soldered to the bottom for support and to prevent the filter pad from being drawn up the stack. The filter frame and the exhaust stack are each tightened down with six wing nuts with the filter forming the gasket for the airtight seal.

The milk trough (fig. 5, F) is constructed from a heavy-gauge galvanized iron. The trough is made with one removable support so it can easily be dismantled for cleaning. The rear trough support, a solid 1/2-inch rod, is centered on, and welded to, the end of the trough. This rod in turn fits into a standard 1/2-by 4-inch pipe floor flange riveted to the inside of the rear wall of the unit. The same type floor flange is riveted to the outside of the front wall of the unit. The front support of the trough is a solid 1/2-by 8-inch rod to the end of which another floor flange has been welded. To

assemble, the rod is passed through the floor flange on the unit front and the trough is fastened to the flange by two bolts. The trough is held in any desired position by a thumb set screw through the outside flange. It can be inverted to void unconsumed milk. A cross pin through the solid rod (fig. 1, d) helps to give leverage in adjusting the trough. The milk is fed to the pigs through a 1/2-inch copper pipe (fig. 1, c) which extends through the brooder wall to the trough edge. The pigs are prevented from disturbing the flow of milk by a divider plate soldered 1 inch from the trough end and the milk runs into the trough between these two plates. The remainder of the trough is separated by divider plates into five equal feeding sections. A small metal funnel is used to facilitate pouring the milk into the pipe. The milk pipe is sealed with a rubber stopper between feedings.

The feeder for dry feed (fig. 4, B) is divided into three feeder sections (fig. 4) to prevent the pigs from crowding into the feeder. The feeder and the feeder cover are sealed with 5/16-by 3/8-inch weather stripping. The feeder is secured to the outside of the brooder with six wing nuts and the cover is tightened down with two 2 1/4-inch trunk hasps.

Fig. 4—Detailed sketches of brooder parts showing: (A) cover, top view, left side—filter frame (e) and service door (d) in position; right side—exhaust stack (f) and service door (d) removed; (B) dry feeder, end view; (C) water fountain, end view; (D) water fountain, top view; (E) exhaust stack, side view; (F) liquid diet trough, top view.



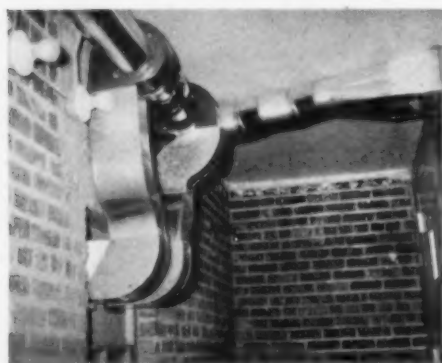


Fig. 5—Squirrel cage-type blower used to exhaust two units. Pilot lights indicate when fan is in operation.

The water fountain (fig. 4, C, D) is divided into two compartments in line with the unit divider. A baffle plate in line with the brooder wall extends to within 1 inch of the bottom of the fountain. This baffle makes the air seal for the unit and, therefore, the cover requires no gasket. The water fountain is held in position with four wing nuts and is sealed with 5/16- by 3/8-inch weather stripping. The water flows into the fountain through a 3/8-inch copper pipe extended through the fountain top. The water level is maintained by a 1/2-inch overflow pipe on the front side of the fountain. A trickle of water flows continuously through the fountain and the overflow is carried to the sewer through a rubber tube.

The air is drawn through the brooder by a 60M squirrel cage-type blower† (fig. 5). The blower, attached to a manifold, can aerate two brooder units.

METHOD OF OPERATION

The baby pigs, taken by hysterectomy, are started in individual units on a diet of cows' milk, minerals, and eggs.^{5,6} The pigs are given 1/8 qt. of the diet per pig three times a day. On about the seventh day, the pigs are transferred to the brooder unit—6 pigs in each compartment. The milk diet is gradually increased to a maximum of 3/4 qt. of diet per pig per day, where it is maintained until the pigs are 4 weeks old. The pigs are also given a commercial pig starter feed of the meal or pelleted type when they are placed in the brooder. This

†American Blower Corp., Detroit, Mich.

⁶The milk mixture is comprised of 1 qt. of homogenized pasteurized cows' milk, 1 whole egg, and 5 ml. of a mineral mixture (49.8 Gm. of $\text{FeSO}_4 \cdot 7 \text{H}_2\text{O}$; 3.9 Gm. of $\text{CuSO}_4 \cdot 5 \text{H}_2\text{O}$; 3.6 Gm. of $\text{MnCl}_2 \cdot 4 \text{H}_2\text{O}$; 0.26 Gm. of KI ; and water to make 1 liter).

is gradually changed to a commercial pig weaning feed by the time the pigs are 4 weeks old. This method permits the pigs to receive the milk diet supplemented with the dry feed and, as they require more food, the dry feed will gradually replace the milk for the bulk of the diet. This food-adaptation procedure essentially eliminates the growth slump often shown by marked changes in diets.

The temperature of the rooms housing the brooders, which is maintained at 90 to 95 F. for the week following introduction of new groups of pigs, is then gradually decreased and held at 80 to 85 F.

The brooder unit is sterilized with 35 Gm. of potassium permanganate in a wide-mouthed can to which 150 ml. of 40 per cent formaldehyde is added just prior to placing the can in the unit. The can is removed after one hour and the exhaust fan is run until all traces of formaldehyde gas have been removed.

When the pigs are about 4 weeks old, they are transferred to a clean area. If the area is cold, a heat lamp may be provided over a bedded area. These pigs, when transferred to ordinary housing, continue on the pig weaning feed and water and are cared for according to normal procedures for good management, as well as a few extra sanitary precautions. These include using a disease-free area, previously disinfecting houses and equipment, limiting traffic by visitors, and preventing contact with "nondisease-free" swine or equipment or air respired by them.

SUMMARY

A brooder unit designed for raising disease-free pigs for use in nutritional studies or herd repopulation programs is described. The unit will house 12 pigs up to 4 to 5 weeks of age and smaller numbers for longer periods. The construction and operational procedures are described in detail.

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Exsheathment in Nematodes.—Many nematodes molt after each of three larval stages. However, *Trichostrongylus axei* and related species do not molt after the second stage, so the outer cuticle is called the sheath in the third stage. When ingested by sheep, the sheath fractures and the change from the free-living to the parasitic phase occurs. The molting is believed to be controlled by the endocrine system of the worm which, in turn, is affected by the hydrogen ion content of the rumen fluid.—*Nature* (March 23, 1957): 619.

Evaporation Rate from the Skin of Cattle.—Evaporation from the skin plays an important part in the thermoregulatory adaptation mechanism in a high temperature environment. In cattle, the highest evaporation rates occurred in the following diminishing order: muzzle, lateral neck, vulva, ventral neck, and front flank, with the slowest rates on the abdomen, forehead, and udder. Shearing greatly increased the evaporation rate. Groups of cows from different sires showed a marked variation indicating that the evaporation rate can be increased by selective breeding.—*Nature* (June 15, 1957): 1256.

Tranquilizers and Ducklings.—During its first day of life, a duckling forms a permanent attachment to any moving object to which it is exposed. In nature, it is the mother; but in the laboratory, it may be a specific person, a wooden image, or anything that moves. Meproamate, in doses which do not alter the behavior of the duckling, can prevent this attachment.—*Pub. Health Rep.* (July, 1957): 627.

Tranquilizers and Morphine "Mania" in Cats.—When 13 cats were injected subcutaneously with 20 mg./kg. of body weight

of morphine, each became highly excitable, apprehensive, ataxic, and displayed mydriasis. When 5 cats were given morphine (20 mg./kg.) plus chlorpromazine (20 mg./kg.), the excitement was reduced but not the mydriasis. Reserpine had a similar effect.—*Nature* (June 15, 1957): 1253.

Animal Cages Made with Sheet Zinc Liners

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The following is a report on the use of sheet zinc for dog cages.

My hospital was built in the summer of 1951, and 39 cages made of sheet zinc were installed. A local welder made the cage frames and fronts from angle iron and steel rods. Illinois quality sheet zinc "L" metal, 0.018-inch gauge, was used for the sides and 0.032-inch gauge, laid over plywood, was used for the bottoms.

Zinc was chosen over other metals since it does not rust or stain, is unaffected by water or body discharges, may be soldered, and does not have a "tinny" sound when struck. It is easily bent, drilled, and formed, and costs only slightly more than galvanized iron. The zinc may also have an advantage in possessing disinfecting properties, forming an oxide that is beneficial to the skin and coat of animals, and having slight deodorizing properties. It could possibly supply the necessary amount of the metal required in the diet if licked by an animal. Zinc is pleasant to the touch and takes on a clean gray appearance.

The cages are two-deck, eight- and five-cage units. The eight-cage units have three bottom cages and five top cages; the five-cage units have two bottom and three top cages. All the cages are 30 inches in depth. The top cages are 28 inches wide and 24 inches high. The bottom cages are 44 inches wide and 36 inches high.

A 1-inch slope from the back to the front of the cage was attained by making the back legs of the units 1 inch longer than the front legs. Drainage troughs for the upper tiers were made of 3-inch guttering.

The cage surfaces have stayed clean and smooth. The animals' bodies have even

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slightly polished the interior surfaces, which are still a clean gray, and there has been no wear. In contrast, the cage fronts have required painting several times.

In comparing the cost, appearance, durability, and the amount of upkeep with other cage materials, the author considers zinc the material of choice.

Lead Poisoning in a Dog.—A dog developed acute gastrointestinal disturbances followed by a paralysis, starting with the hindlegs and extending to the head, after eating grass contaminated with red lead. It partially recovered but the hindlegs remained paralyzed. At necropsy, there was evidence of subacute necrotic myelopathy. Lead was found in the spinal cord and brain.—*Tidjschr. voor Diergeneesk.* (June, 1957): 420.

Lead Arsenate Poisoning in Cattle.—In a herd of 35 dairy cattle, in Ontario, 20 of the 24 young and nonmilking animals suddenly became acutely ill and 14 died within four days. The milking cows, fed separately, remained well. The affected animals showed signs of abdominal pain, tremors, profuse dark diarrhea, and depression. Their temperatures were normal to subnormal. On necropsy, their gastrointestinal tracts were acutely inflamed, the mucosa swollen and edematous with areas of erosion. Their livers were congested and icteric.

Lead arsenate was found in the feed bin and was present in the feed at a level of 890 p.p.m. Analyses of urine, milk, and tissues from the affected animals showed no lead, but arsenic was present in all, ranging from a trace (milk) to 80 p.p.m., indicating that arsenic is much more rapidly absorbed than is lead.—*Canad. J. Comp. Med.* (July, 1957): 248.

Can Ornithosis Be Transmitted from Man to Man?—Ornithosis was unknown in Norway until 1955. In none of the 14 cases found to date can birds be incriminated as the source of infection, and transmission from man is being studied.—*J. Am. M.A.* (June 15, 1957): 794.

Bovine Infectious Keratoconjunctivitis.—This disease was believed, in Germany, to be caused by a Rickettsia-like, bipolar-stained organism 0.2 to 1.0 μ long, which

was found in smears from the conjunctiva and in cultures from the aqueous humor. Conjunctival instillation of cultures in healthy animals produced clinical signs of the disease in 44 days, and the Rickettsia was later recovered from them. *Hemophilus bovis* was considered a secondary infection. Streptomycin therapy was successful.—*Berl. Muench. tierärztl. Wchnschr.*, 69, (1946): 47.

A Note on Aujeszky's Disease (Pseudorabies).—This virus produces a noncontagious, clinically striking, and always fatal disease in several natural hosts (cattle, dogs, cats, and rats), while in swine it is highly contagious and often clinically nonrecognizable. This indicates that, whenever a virus is extremely destructive to a certain host, a search should be made for another natural host in which it causes only a mild infection.—*E. Traub in Deutsch. Vet.-med. Gesell.* (March, 1955): 12.

Laymen Appraise Miracle Stock Tonics.—Tonics usually contain many things that are not needed, and ingredients which might have value are present in insufficient quantities. In the typical tonic for cows, the long list of vitamins are mostly B vitamins which cows produce adequately. As a "shotgun treatment" these tonics usually contain nuxvomica, quassia, fenugreek, ginger, capsicum, and anise. Also, why pay 15 to 20 cents per pound for charcoal (to absorb gas); bicarbonate of soda (to relieve stomach acidity); and for salt, magnesium sulfate, or sodium sulfate?—*Brown Swiss Bull.* (July, 1957): 82.

Treating a Chilled Body.—Shivering is an involuntary motion in which muscles may produce heat five times as fast as usual. Meanwhile, the peripheral blood vessels contract to preserve heat. In water less than 68 F., man loses heat faster than it can be replaced. Consciousness dims and shivering stops when the body temperature falls to 95. Survival is possible even with a body temperature of 77 provided the patient is placed in water between 110 and 120 F. to heat the outer flesh rapidly. Mild warmth merely relaxes the vessels, allowing the blood to course through the still cold flesh, which may cause a sudden fatal drop of inner temperature.—*Sci. News Letter* (June 22, 1957): 386.

Prevention of So-Called "Hardware Disease" in Cattle Using a Magnetic Metal Retriever

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THE INCIDENCE of traumatic reticulitis (hardware disease) in dairy cattle has always been a problem and, in recent years, seems to be on the increase. This paper deals with an attempt to prevent trauma caused by the presence of metal in the bovine reticulum.

MATERIALS AND METHODS

A Muffy magnetic retriever,¹ passed through the mouth, was used for the removal of metal from the reticulum (fig. 1).

A Jackson imported metal detector² was used to determine (1) the presence of metal and (2) if all the metal had been removed with the retriever. To effectively remove all metallic foreign bodies, the practitioner must be thoroughly acquainted with the use of the metal detector. The ability to judge when metal is present in the reticulum, and when it is not, is of utmost importance. Our experience was gained by using the metal detector before and after all rumenotomies, thus learning the limitations and sensitiveness of the instrument.

For success in using the metal retriever, bulky feeds should be withheld for 12 to 18 hours, regardless of the type of roughage fed. However, the cattle should have their normal grain ration and free access to water. With normal feed intake, the rumenoreticular content is not fluid enough to allow easy and complete entrance to the reticulum.

In passing the magnetic retriever, a nose-tong is used for restraint and to draw the head relatively straight forward. One man holds the mouth speculum in place while the operator passes the retriever. It is often necessary to pass the retriever three or four times to remove all of the metal (fig. 2).

After each passage, and removal of metal, the animal is tested with the metal detector to determine if metal is still pres-



Fig. 1—Muffy's magnetic retriever with samples of metal removed.

ent. If a negative test is shown, the animal is considered free of metal in the reticulum.

RESULTS

During the year that we have used this equipment in our practice, 24 herds, consisting of 670 cattle, have been subjected to this procedure. Of the 670 animals, 460 showed the presence of metal in the reticulum, and the magnetic retriever was used



Fig. 2—This shows how the animal is restrained while the retriever is passed.

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on each. All the metal was removed from 300 cattle (65%). Although 160 animals still had metal in the reticulum, many pieces had been removed from the majority, but the metal detector still detected a small amount of metal.

The reasons that it is difficult to remove all metal from some animals are: (1) incomplete starving, (2) the metal may be caught in the "honeycomb" lining of the reticulum, and (3) contractions of the reticulum may prevent entry of the magnet.

HERD CASE REPORTS

In herd 1 (table 1) during the previous year, eight rumenotomies had been performed for traumatic reticulitis. Since removing all the metal possible from this herd, one year has elapsed and there has been no evidence of "hardware" trouble.

In herd 2, in which four rumenotomies had been performed in a two-month period, one year had elapsed after using the metal retriever before any metallic foreign bodies caused trouble.

In herds 10 and 12, which were owned by the same dairyman, 3 lb. of metal was removed from the 78 cattle, and the number of cows showing anorexia and fluctuations in milk production has been reduced.

TABLE 1—Results from Using the Magnetic Retriever, on a Herd Basis

Herd (No.)	Total animals in herd	Animals showing metal in reticulum		All metal removed		Metal still present (No.)
		(No.)	(%)	(No.)	(%)	
1	35	15	43	12	80	3
2	40	22	55	16	73	6
3	14	8	57	4	50	4
4	29	26	90	22	85	4
5	27	26	96	20	69	6
6	12	11	92	6	55	5
7	12	9	75	7	77	2
8	50	19	63	12	63	7
9	25	17	68	12	71	5
10	33	33	100	15	45	18
11	25	5	20	4	80	1
12	45	42	93	20	48	22
13	24	21	88	12	57	9
14	44	31	70	18	58	13
15	28	21	75	14	67	7
16	34	17	50	8	47	9
17	16	9	56	7	78	2
18	50	14	28	11	79	3
19	32	32	100	26	81	6
20	16	14	88	11	78	3
21	20	16	80	12	75	4
22	44	33	75	21	64	12
23	12	5	42	5	100	0
24	23	14	61	5	36	9

OTHER USES OF THE METAL RETRIEVER

We have also used the metal detector and magnetic retriever as a means of differential diagnosis in animals where something besides metal material might have been the cause of the syndrome. When all signs of metal could be removed from the reticulum of these animals, some other source of the trouble has been sought.

We have had a degree of success in removing penetrating metal from animals in which traumatic reticulitis has been diagnosed. Of the last 129 cows diagnosed as having traumatic reticulitis, the penetrating metal was removed from 30 with the retriever and all 30 animals made a satisfactory recovery. In the remainder of the animals, a rumenotomy was performed. Only in those animals in which a diagnosis of traumatic reticulitis was made, and treatment given within 12 hours of the first signs of the disease, was the use of the metal retriever effective.

CONCLUSIONS

It is our contention that the use of this metal retriever provides an effective means for the prevention, or at least the reduction, of "hardware disease." Our clients favor it and welcome some method of preventing the losses that previously occurred in their herds from the ingestion of metal; it not only prevents the loss of animals, but also the loss in milk production. To be thoroughly effective, the metal should be removed from the animals in these herds each year.

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Rupture and Prolapse of the Uterus in a Bitch.—A young working Collie, which four days previously had whelped 3 pups, was lethargic and part of the uterus was protruding from the vulva. Laparotomy revealed a completely transverse rupture at the middle of the left cornu with the caudal portion invaginated and prolapsed. After reduction of the prolapse and ovarohysterectomy, she made a satisfactory recovery.
—B. N. Pyke in *Vet. Rec.* (July 13, 1957): 671.

A Modified Embryotome—Its Description and Use

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During my 20 years of practice as a veterinary surgeon in Poland, I encountered numerous difficult dystocias, usually involving cows. It is often necessary to perform an embryotomy and, for this purpose, a local locksmith made an embryotome, according to my specifications, for use in large domestic animals, especially horses and cows.

For five years, I used this embryotome with excellent results and, in 1932, published a description of it.* Shortly thereafter, a Polish factory, engaged in the manufacture of medical and veterinary tools, agreed to manufacture my instrument.

The embryotome† consists of a sharp, hooked knife on a long shaft, with the handpiece in the same plane as the knife. A ring, through which the middle finger is inserted, is soldered on the back of the knife (fig. 1).

Method.—The highlights of an embryotomy with this instrument are presented briefly. The part of the fetus which is to be first removed, usually a forelimb, is secured with an obstetrical chain and pulled out as far as possible by an assistant. The skin is slit down the medial surface, severed at the fetlock joint, and is then separated from the leg with a putty knife, straightened fingers, or a chisel to about the level of the shoulder. The leg is freed by pressing the embryotome into, and severing, the muscles and connective tissues which attach the scapula to the thorax. The leg is then removed by traction, providing more operating space. The other foreleg is pulled into position and removed in the same manner. Then the head is secured and an attempt made to extract the calf completely; however, if the resistance is great, no forcible method should be used, because of the danger of injury to the cow or of prolapse of the uterus. If ex-

traction is not possible, the embryotomy should be continued and the head, with the neck as far as the first rib, is next removed. The head and neck are skinned and the neck muscles are cut close to the thorax with the embryotome. The head and neck are rotated to the right and left until the vertebrae separate. They are then easily removed.

If the remainder of the fetus can not be extracted at this stage, three to four ribs must be removed by cutting them with the embryotome at the sternum and at the vertebrae. After severing the intercostal muscles, the ribs can be removed and the viscera taken out through this aperture. The remainder of the fetus can often then

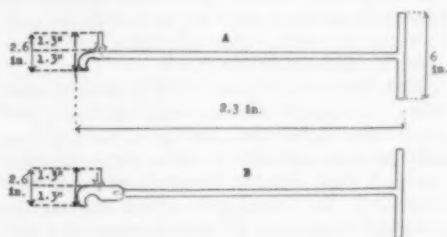


Fig. 1—A sketch showing the dimensions of the embryotome. The instrument should be made of stainless steel. The knife and handle can be one piece (A) or two pieces (B) with a removable handle. The ring can be fastened with screws, or soldered.

be extracted without difficulty. If the hips lock at the pelvic inlet, the fetal pelvis can be split at the symphysis with short, firm jerks on the embryotome.

Discussion.—The advantages of this tool are: (a) The work is done under the skin, and (b) the operator feels secure when handling the tool because both hands work simultaneously, one hand covering the knife, directing it, and at the same time, protecting the uterus, while the other hand

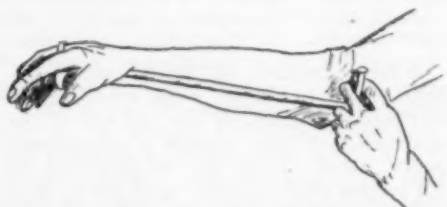


Fig. 2—A sketch showing the middle finger inserted through the ring and the hand ready to guide the knife which is moved chiefly by the other hand.

Dr. Kildiszew came to the United States in 1950. At present, he is in the Departments of Hematology and Urology, Henry Ford Hospital, Detroit, Mich.

*The Polish veterinary magazine, "Przegląd Weterynaryjny" (Veterinary Review).

†All rights reserved.

holds the tool firmly and controls the direction of the cutting edge. This operation is preferably done when there is no labor; however, labor pressure does not necessarily interfere with the procedure.

Since short embryotomes can be lost in the uterus, this modification of the instrument can also avoid delay and complications.

Abdominal Surgery in Horses.—Of nine laparotomies on horses, at the University of Sidney, Australia, two were for bilateral cryptorchidism, two to remove ovarian tumors, two to repair ruptured bladders, and one each for retention of meconium, ileocecal-valve impaction, and a urinary bladder calculus. For anesthesia, pentobarbital sodium was used alone for foals and in a mixture with chloral hydrate and magnesium sulfate for adults.

Flank incisions were used in five operations; prepubic paramedian incisions in four. The latter usually gave better access to the lesion and were more readily sutured, but a fatal eventration occurred in one. Of the 7 horses in which the operation was completed (2 were hopeless), 6 recovered without complications.—*D. R. Hutchins in Austral. Vet. J. (July, 1956): 149-152.*

Spermatophore Insemination.—Insemination is accomplished in chiggers by the female picking up spermatophores consisting of a base, a flexible stock, and a sac of sperm which have been deposited by the male. After identifying the spermatophore by tapping it, the female elevates her body, walks over the object with her genital plates spread apart, lowers her body over the sperm sac, and grasps it by closing the genital opening. One male was observed to deposit 12 spermatophores in about two hours and 1 female picked up 4 in 23 minutes, and a fifth within an hour.—*J. Parasitol. (June, 1957): 256.*

Males Sterilized by Epididymal Injection.—Male ruminants were sterilized, in Germany, by injecting into the tail of the epididymis of each testicle a sclerotherapeutic agent (Dondren) in quantities of 0.5 ml. for small animals up to 4.0 ml. in a bull weighing 1,980 lb. The injected epididymis immediately feels tight. The next day, there is a slight and mildly sen-

sitive swelling in the epididymis but no general reaction. After eight days, the epididymis feels like cartilage and is adhered to the tunica vaginalis and the scrotum. When the bull is later castrated, it is necessary to excise the adherent scrotum in order to free the testicle. The testicle is usually normal but may be slightly edematous.

This procedure was used in 5 breeding bulls, 10 young bulls, 4 rams, and 3 bucks (goats). In all cases, it was successful and without complications. The injection resulted in the formation of granulation tissue which is gradually replaced by connective tissue, completely sealing the ducts. These animals may be used as teasers.—*Berl. u. Munch. Tierärztl. Wchnschr. (April 1, 1957): 127.*

Vibriosis in Ewes.—*Vibrio fetus* was isolated from all but 1 of 18 ewes (in a flock of 142) which aborted between 92 and 140 days of pregnancy; the exception was a ewe that had been treated prophylactically with dihydrostreptomycin. All lambs were dead except the 4 aborted after gestation day 127, but these died shortly. Vibrios were isolated from 5 of 25 apparently healthy ewes which produced healthy lambs; from the fetal fluid from 2 normal ewes; gastric contents of 1 newborn normal lamb; and from the semen of some rams. Thus, infection can be spread by coitus but also by aborting animals. Fetal death is not the primary cause of abortion, and infected ewes may show no signs of infection.—*G. W. Eide and O. Helle in Nord. Vet.-med. (May, 1957): 337.*

A Fertile Tortoise-Shell Tomcat.—The gene for yellow in the domestic cat is apparently sex-linked. Tortoise-shell (black and yellow mottled) cats are normally female and the rare males are usually sterile. One such male of known parentage has sired at least 65 kittens in two years, and at least 11 were tortoise-shell males. Three of these are mature but are not fertile.—*Nature (May 25, 1957): 1087.*

Mink kit production in 1957 is reported to show a substantial drop in the average per bred female. Many were not pregnant and the kit mortality was high in the first two days after birth.—*Am. Fur Breeder (July, 1957): 37.*

Proteolytic Enzyme Therapy in Equine Practice

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THE ADMINISTRATION of proteolytic enzyme preparations has proved a useful adjunct to antibiotic and other therapy in conditions complicated by fibrinous and purulent exudates and accumulated debris, which frequently fail to respond to conventional treatment. Originally, in animals, enzymes were applied topically but, during the past year, excellent results have followed parenteral administration.^{1,4,5} In unresolved pneumonia and bronchiectasis in man, resolution by liquifying material in the involved lungs appeared to be hastened by aerosol inhalation or intratracheal administration of enzymes,^{2,3} but only one report has appeared on similar use in animals.⁶

Our purpose is to report case histories in which such an enzyme was used parenterally in conjunction with other therapy for treatment of pneumonia and miscellaneous inflammatory conditions in horses. The product used (Varidase[®]) is an enzyme complex containing (1) streptokinase which liquifies clotted blood and fibrinous exudate, and (2) streptodornase which liquifies pus. Each vial represented 100,000 units streptokinase and 25,000 units streptodornase. The solution was prepared in sterile saline solution at the time of use at the rate of 10 cc. per vial.

This preparation has been tried in treatment of other conditions. In some, it appeared to have little or no effect.

PNEUMONIA

This enzyme was used as an aid in treatment of 4 horses and 1 pony with bronchial pneumonia, or pneumonia and pleuritis. Since the dosage was not definitely established, it was varied according to body weight and condition of the animal. Routine therapy administered simultaneously to each animal included sulfamethazine, intravenously; an initial dose of 1.0 to 1.5 gr. per pound of body weight, then three daily doses of 1 gr. per pound; and peni-

cillin, intramuscularly for four days, 1,500,000 units daily to the foals and 3,000,000 units daily to the 2-year-old filly and the pony.

Case 1.—This Thoroughbred foal, 3 months old, had a history of respiratory infection of three days' duration. It had a temperature of 105 F., dyspnea almost to the extent of "thumping," and consolidation with moist râles in the ventral portion of both lungs. Sulfamethazine and penicillin treatment was started, together with $\frac{1}{2}$ vial of enzyme intramuscularly in different sites for four days.

In 48 hours, the temperature had gradually decreased to within the normal range, there was definite improvement in the rate and type of breathing, and lung sounds and consolidation were markedly reduced. In one week, the foal was normal.

Case 2.—A Thoroughbred foal, 2 months old, had a temperature of 104.8 F., considerable respiratory distress, lung congestion, and definite "thumps." One half vial of enzyme was given daily for four days with sulfamethazine and penicillin. After two treatments, the fever subsided, lung congestion cleared, and the thumping action was barely perceptible. The foal was clinically normal in four days except for a slight cough which persisted for seven days.

Case 3.—A Thoroughbred foal, 1 month old, was considered in a hopeless condition after several days of home treatment. It was given $\frac{1}{2}$ vial of the enzyme initially, and $\frac{1}{3}$ vial on each of three additional days, in conjunction with sulfamethazine and penicillin. On the second day, the temperature was 105 F., and there was a definite dyspnea. However, within 48 hours, respiration and temperature had returned to normal, and clinical recovery was complete in seven days.

Case 4.—A Thoroughbred filly, 2 years old, was in training for racing. Examination revealed a temperature of 105.6 F., severe pleuritis, and congestion of the lower portion of both lungs. Her chest was so sensitive that, when the stethoscope was applied, she flinched and quivered from pain or fear of pain. She was given 1 vial

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[®]American Cyanamid Co. The product used here is ordinarily used in man. A similar product prepared for veterinary use (Varizyme—American Cyanamid Co.) contains an additional element, human plasminogen, intended to increase its efficacy in animals.

of enzyme in addition to sulfamethazine, penicillin, and 2 Gm. of streptomycin daily for four days. Supportive therapy included vitamin B complex and a strychnine tonic. Saline laxative and enemas were also given since she showed pain on defecation.

In 24 hours, the fever was 102 F., a stethoscope could be applied to the chest without reaction, and the filly could move with less evidence of pain. In 72 hours, the temperature was normal and remained so. Two weeks after the start of treatment, she appeared clinically normal.

Case 5.—A pony that had been treated four days for colic and toxemia was found to have a temperature of 105.2 F., with pneumonia and pleuritis. It was given 1 vial of the enzyme daily for four days, together with sulfamethazine and penicillin. The temperature was normal in 72 hours, and the breathing and soreness greatly improved. On the fifth day, the pony appeared clinically normal, and was returned to pasture at the end of 14 days.

TRAUMATIC CONDITIONS

Four adult horses with various traumatic conditions were given 1 vial of the enzyme intramuscularly, daily, for various periods. When penicillin was used simultaneously, 3,000,000 units was injected intramuscularly at different sites.

Case 6.—A stallion, 5 years old, had a hemacyst from an injury which involved the penis and the right side of the sheath. It was about 10 inches in diameter. The enzyme and penicillin were administered for four days. Also, for seven days physical support and cold water and ice were applied locally. By this time, the hemacyst was resolved except for a slight thickening of the tissue which pulled the penis to the right on erection. Ten days after the initial treatment, no scar tissue or thickening was palpable, and erection was normal. After a rest of six weeks, the stallion was returned to breeding.

Case 7.—A gelding, 3 years old, injured a knee when unloaded from a van. In eight hours, the knee was twice its normal size, the respiratory rate was increased, and the temperature was 102.5 F. He would not bear weight on the leg. The enzyme and penicillin were administered once. Local packs with cold antiseptic solutions were applied periodically for about 12 hours, by which time the swelling was greatly re-

duced and the animal was able to walk. Within three days, the horse was clinically normal. However, in our experience, a similarly rapid recovery may follow local therapy alone in 50 per cent of similar cases.

Case 8.—A Thoroughbred mare, 10 years old, with a left hock three times its normal size and showing considerable lameness, was given the enzyme and penicillin for four days. After three treatments, the lameness was almost gone and the swelling was reduced about 50 per cent. Two days after the last treatment, the hock appeared normal and no lameness was evident. This horse recovered in less than one fourth of the time usually required.

Case 9.—A mixed breed, Pinto stallion, 4 years old, had been injured above the right eye the previous day and could be examined only under local anesthesia. The area was severely contused, the eyelids were swollen and closed, but there was no evidence of injury to the eyeball. One vial of the enzyme was administered daily for two days. In 24 hours, the eye was partly open; in 48 hours, it was completely open and most of the swelling had gone. One week later, an abscess was observed over the eye. This was drained, and recovery followed.

DISCUSSION

It is our opinion that, in general, the use of this enzyme in these cases reduced the time for recovery and the medication required by at least one half and, in some cases, by one fourth. Judging from previous experience, when bronchial pneumonia was treated with antibiotics alone, the response was not ordinarily as rapid as in cases 2 and 3; complete return to normal often required three weeks or more. Each year, many foals die from a condition such as the one reported in case 3 and others develop a chronic pneumonia with or without fever. The recovery of the 2-year-old filly was considered unusual; pleuritis as severe as this ordinarily ends in death. Foals with less severe pleuritis have required long treatment and careful nursing.

The response in case 6 (the hemacyst of the penis) was considered exceptional. The prognosis in a case such as this would be unfavorable. The fact that this valuable Thoroughbred stallion was returned to

service without any thickening or deviation of the penis is indeed remarkable.

SUMMARY

The use of Varidase, an enzyme complex containing streptokinase (100,000 U.) and streptodornase (25,000 U.) in addition to routine therapy in 5 foals or horses with pneumonia, resulted in more and faster recoveries than in previous similar cases.

Similar treatment also resulted in slightly to markedly more rapid recoveries from traumatic conditions in 4 horses.

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Viral Arteritis Differentiated from Viral Rhinopneumonitis of Horses.—A filterable agent from an aborted fetus is designated as "equine arteritis virus" because of lesions produced in small arteries. Another agent, previously described as "equine abortion virus" is designated as "equine rhinopneumonitis virus." Both diseases result in abortion during the febrile or convalescent period in viral arteritis, but not until after the convalescent period with viral rhinopneumonitis. Both also produce conditions previously described as equine influenza, but they differ in severity. These viruses have distinct properties and produce different lesions. Neither is related to the viruses of human and swine influenza. It is, therefore, proposed that the term "influenza" be discontinued as the name of a respiratory disease of horses.

The signs of uncomplicated rhinopneumonitis virus infection are fever, depression, conjunctivitis, respiratory catarrh and, occasionally, edema of the legs and diarrhea, all mild, and there are no known

fatal cases. In viral arteritis, the same signs are present but more marked and, in addition, there is palpebral edema, congested and hemorrhagic nasal mucosa, respiratory difficulty, colic, weakness, prostration, and a high mortality (13 of 39 affected horses died.) Leukopenia is more marked in viral arteritis. Lesions in aborted fetuses are similar but inclusion bodies were found only in rhinopneumonitis virus infection.—*Cornell Vet. (January, 1957): 3.*

Cerebellar Hypoplasia and Its Sequela in a Horse

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Many horses lack the coordination to become satisfactory jumpers, and frequently attempts to train such horses end disastrously. Such a case is reported here but, in contrast to previous experience with such animals, a possible anatomical explanation for the training difficulties and the final fatal accident was found.

CASE HISTORY

On Jan. 14, 1956, a gray Thoroughbred gelding, 6 years old, was admitted to the University of California veterinary hospital with the following history:

Because attempts to race this horse had been unsuccessful, he was being trained as a jumper. Although no gait abnormalities were ever noticed, the horse had tipped over backward 20 or 30 times during the training period, most frequently when starting to make his jump. No detailed observations of these falls were made.

Four days prior to his arrival at the clinic, the horse had again reared and fallen over backward while attempting a jump, and his head had struck the ground hard. Following this, the animal had a hemorrhage from the nostrils for about ten minutes. However, he was able to rise and appeared to be normal. Later the same day, the horse began to show signs of general stiffness and soreness and stood with his back arched. This stiffness progressed until he was able to move only with difficulty. During the 20-mile ride to the clinic,

From the veterinary clinic, University of California, Davis.

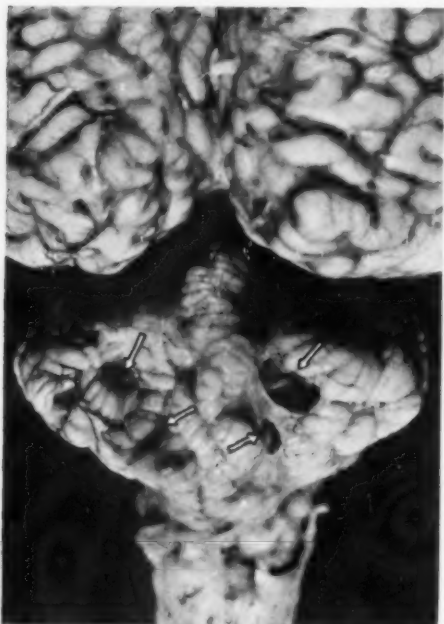


Fig. 1—Bilaterally symmetrical defects (arrows) involving the most medial lobules of the lateral cerebellar hemispheres of the horse.

the horse lost his footing in the trailer and was unable to rise.

The clinical examination revealed that the horse was in excellent condition and well groomed but was severely depressed,

lethargic, and could not rise. The rectal temperature was 101.5 F., the pulse was 60 and rather weak, and respirations were of the Cheyne-Stokes variety. The pupils were dilated and did not respond to light. The optic papillae, as observed with the ophthalmoscope, were edematous.

Clonic spasms of the muscles of the legs developed shortly after admission, followed later by extensor rigidity and stiffness of the neck muscles. Excessive perspiration occurred, especially during the periods of muscle spasm. Terminally, a noticeable sign was the intense fiery-red injection of the nasal, oral, and conjunctival membranes. The horse died four hours after entering the clinic.

Necropsy Findings.—The significant necropsy lesions were confined to the head. There were bruises over the supraorbital process of the frontal bone and the zygomatic arch. Although these relatively delicate structures were not fractured, there was a transverse fracture which followed the suture line between the presphenoid and postsphenoid bones at the anterior aspect of the hypophysis. A displacement of approximately 0.5 cm. had taken place along this line. There were moderately severe hemorrhages in the basilar meninges and in the pituitary gland, and death was presumed to be due to the resulting increased intracranial pressure.

Unexpected lesions of possible etiological significance were found in the cerebellum, in which bilaterally symmetrical defects in



Fig. 2—Frontal section through the defect shown in figure 1. Note the incomplete gray cortical layer and the discolored "white" medullary substance. Pal Weigert stain.

the lateral hemispheres were present (fig. 1). These defects were irregular but involved primarily the most dorsal and medial lobules of these hemispheres.

Microscopically, these cerebellar defects appeared as localized areas of cerebellar hypoplasia. No remnants of pre-existing cortical tissue were seen in the defective areas and no myelin loss was seen in the white matter underlying them (fig. 2). Beneath the hypoplastic area, the white matter was either entirely naked or poorly covered by a modified molecular layer of tissue.

DISCUSSION

Since detailed information concerning specific localization of cerebellar function in the horse is lacking, it is impossible to be sure a cause and effect relationship exists between the focal cerebellar hypoplasia and the animal's inept performance as a jumper. But since the loss or impairment of any of the functions of the corpus cerebelli could result in reduced ability to perform coordinated motor activities, this explanation seems reasonable.

Hereditary cerebellar aplasias, hypoplasias, and atrophies have been reported in several species,¹ but this case affords no evidence of the possible genetic origin of the condition. It does differ both clinically and anatomically from the familial cerebellar ataxia in foals of the Oldenberg breed.²

One feature of the handling of this case probably deserves mention. It is unlikely that any line of therapy in this type of case would have offset the deleterious effects of transportation.

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Carpal Hygromas in Cattle.—The occurrence of carpal hygromas in dairy cattle was not significantly higher in those experimentally infected with *Brucella abortus* than in uninfected controls. There were as many in cattle vaccinated once or more with strain 19 as in unvaccinated cattle.—*Vet. Bull. (June, 1957): Item 1639.*

Antibiotic Therapy in Acute Eperythrozoonosis of Swine

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In previous studies of the therapy of *Eperythrozoon suis* infection in swine,^{1,2} nearsphenamine was found to exert specific action against the organism. Adequate dosage administered to swine with experimental or field infections resulted in a microscopically evident reduction or elimination of organisms from the blood in a matter of hours and a marked clinical improvement in pigs, usually within 24 hours.

The possible value of several broad-spectrum antibiotics for treatment of acute eperythrozoonosis was investigated. Because of their ease of administration and general availability, these drugs would provide a marked improvement over the use of nearsphenamine in treating this disease.

PROCEDURE

The pigs used in this study weighed 30 to 100 lb. and were splenectomized to provide uniform susceptibility to the acute form of the disease.³

Susceptible pigs were inoculated with a known source of infectious blood, and then clinical and laboratory observations were made daily. Blood examinations included erythrocyte and leukocyte counts, packed erythrocyte and hemoglobin value determinations, and microscopic observations of Giemsa-stained blood smears.

Tetracycline and oxytetracycline were given intramuscularly in single doses at various levels (table 1). Treatment was given when parasites were most numerous in the blood, usually in the early clinical stages. Repeated relapses occurred in these splenectomized pigs as observed previously,^{1,2} and the pigs were treated during the majority of these relapses.

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Contribution No. 160, Department of Veterinary Medicine, Kansas Agricultural Experiment Station, Manhattan.

The participation of Dr. Castro in this study was made possible through a fellowship from the Rockefeller Foundation of New York.

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RESULTS

Oxytetracycline and tetracycline were each effective in a single dose of 3 mg. per pound of body weight, or greater (table 1).

TABLE 1—Effect of Single, Intramuscular Doses of Tetracycline and Oxytetracycline in 11 Pigs Experimentally Infected with Acute Eperythrozoonosis

No. of parasitic attacks treated*	Dosage (mg./lb. body wt.)	Results of treatment†
Tetracycline		
1	1	No value
3	2	No value
3	2	Successful
8	3	Successful
5	5	Successful
1	10	Successful
Oxytetracycline		
1	1	No value
3	2	No value
4	2	Successful
8	3	Successful
2	5	Successful

*In these 11 pigs, 45 parasitic relapses occurred, 39 of which were treated.

†Successful treatment—marked reduction in number of blood organisms within 24 hours subsequent to therapy, and a reduction of temperature with improved clinical condition within 24 hours. No value—no reduction in number of blood organisms, and no change in temperature or clinical condition.

A dose of 2 mg. per pound was effective in about half of the animals treated.

In animals that received adequate dosage, a marked reduction in the number of parasites was noticed within six hours after therapy. A return to normal body temperatures occurred and clinical improvement was evident within 24 hours. As with neosarsphenamine,¹ reductions in erythrocyte counts, hemoglobin, and packed cell values ceased after therapy; however, additional relapses occurred within three to eight days.

Of the 11 animals treated, 2 died following inadequate dosage, and 2 others died during untreated relapses. The remaining 7 animals recovered. Of the 11 untreated control pigs, 9 died, and 2 recovered.

SUMMARY

Specific action against *Eperythrozoon suis* was obtained with single intramuscular doses of either oxytetracycline or tetracycline at the rate of 3 mg. per pound of body weight, or greater. The results were similar to those previously observed with

single intravenous doses of neosarsphenamine.

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Prophylaxis and Treatment of Strangles.

—When 340 horses and colts, in Romania, were vaccinated with a commercial *Streptococcus equi* vaccine, no immunity resulted, whether or not it was repeated in 15 to 20 days. An autogenous vaccine was also without benefit. Treatment with penicillin and sulfathiazole hastened recovery, especially when 20 to 40 ml. of Lugol's solution was also given intravenously.—*An. Pasteur Inst. Serums and Vaccines, Bucharest*, 1, (1956).

Trypsin Therapy for Inflammations.

Trypsin has long been used in medicine as a topical debriding agent, applied as a powder, ointment, or solution. When it was recently used in man as a thrombolytic and anti-inflammatory agent, injected intramuscularly (2.5 to 5.0 mg.) every six hours, heat and tenderness disappeared in about 48 hours. Edema resolved more slowly, often with complete resolution in about four days.—*New England J. Med.*, (Feb. 7, 1957): 253.

Goat Pox.—Goat pox, reported for the first time in Sweden, was highly contagious but benign. Lesions were most common on the lips and oral mucosa but also occurred on the udder and teats. Contact sheep showed no sign of the disease but several exposed persons developed poxlike eruptions on the hands. The disease could be transmitted to goats, sheep, reindeer, and occasionally to rabbits, but not to guinea pigs, mice, pigs, poultry, or calves. Most goats were immune for 24 to 153 days after recovery but the immunity was not complete.—*Nord. Vet.-med. (June, 1957): 431.*

Testing Milk for Preclinical Signs of Ketosis

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The practitioner who has compiled records on his ketosis cases has probably found that early treatment is essential to good results; especially when a glucocorticoid product is being used. If the practitioner is to be called early, the herdsmen must have a better method of detecting

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the onset of ketosis than any of the present tests for ketonuria.

To prove the dependability of such a test, the following laboratory work was done between March 7 and 11, 1957, in a large herd of Holstein-Friesian cattle. These cows are exceedingly high producers and have long been prone to severe cases of ketosis, usually within 30 days of freshening.

During the four-day period, two or three blood samples were collected from each cow and placed in a tube of sodium oxalate; part of each sample was used for sugar determinations by the Shaffer-Hartman-Somagi method, and part was centrifuged

TABLE 1—Laboratory Findings on 5 Cows with Ketosis

Cow No.	Date	Blood sugar	Blood ketones	Urine ketones	Milk ketones	Therapy
1	3-7-57	33 mg./100 ml.	+	+	+	100 mg. meticorten, i.m.
	3-10-57	54 mg./100 ml.	+	+	+	
	3-11-57	54 mg./100 ml.	+	+	+	
7	3-7-57	40 mg./100 ml.	+	+	+	100 mg. sterane, i.m.
	3-11-57	40 mg./100 ml.	+	+	+	
12	3-7-57	33 mg./100 ml.	+	+	+	100 mg. meticorten, i.m.
	3-11-57	42 mg./100 ml.	+	+	+	
16	3-7-57	45 mg./100 ml.	+	+	+	100 mg. meticorten, i.m.
	3-11-57	58 mg./100 ml.	+	+	+	
20	3-7-57	37 mg./100 ml.	+	+	+	100 mg. meticorten, i.m.
	3-11-57	52 mg./100 ml.	+	+	+	

TABLE 2—The Same Data (Table 1) Was Collected on the Following 11 Cows Not Having Ketosis

Cow No.	Date	Blood sugar	Blood ketones	Urine ketones	Milk ketones	Therapy	Remarks
19	3-8-57	41 mg./100 ml.	—	+	—	100 mg. meticorten, i.m.	Greatly depressed; ketosis susceptible.
	3-11-57	59 mg./100 ml.	—	+	—		
4	3-8-57	45 mg./100 ml.	—	+	—	500 cc. 50% dextrose, i.v.	Anorectic, ketosis considered imminent.
	3-10-57	43 mg./100 ml.	+	+	± Trace		
	3-11-57	43 mg./100 ml.	+	+	± Trace		
5	3-8-57	47 mg./100 ml.	Trace ±	+	—		Normal cow; remained normal.
	3-10-57	56 mg./100 ml.	Trace ±	+	—		
	3-11-57	56 mg./100 ml.	Trace ±	+	—		
6	3-8-57	65 mg./100 ml.	—	+	—		Normal cow.
	3-11-57	55 mg./100 ml.	—	+	—		
8	3-8-57	55 mg./100 ml.	—	+	—	100 mg. sterane, i.m.	Retained fetal membranes.
	3-11-57	53 mg./100 ml.	—	+	—		
9	3-8-57	57 mg./100 ml.	—	+	—		Normal cow.
	3-11-57	58 mg./100 ml.	—	+	—		
10	3-8-57	49 mg./100 ml.	—	+	—	100 mg. sterane, i.m.	Normal cow.
	3-11-57	44 mg./100 ml.	—	+	—		
13	3-8-57	43 mg./100 ml.	—	+	—	100 mg. meticorten, i.m.	Normal cow.
	3-11-57	64 mg./100 ml.	—	+	—		
14	3-8-57	53 mg./100 ml.	—	+	—	100 mg. meticorten, i.m.	Cow was afflicted with acute mastitis and treated.
	3-11-57	56 mg./100 ml.	—	+	—		
17	3-8-57	55 mg./100 ml.	—	+	—	100 mg. meticorten, i.m.	Retained fetal membranes and nephritis.
	3-11-57	65 mg./100 ml.	—	+	—		
18	3-8-57	39 mg./100 ml.	—	+	—	100 mg. meticorten, i.m.	Aborted at 8 mo., retained fetal membranes, and suspected of having a foreign body.
	3-11-57	61 mg./100 ml.	—	+	—		

so that the plasma could be tested for ketones. At the same time, urine and milk samples were collected for similar testing for ketones. All samples were in the laboratory 30 minutes after collection.*

The plasma, urine, and milk were all tested for ketones by placing 2 drops of each on a mound of Denco powder† the size of a thumbnail (cost, 2 cents per test). A positive test is indicated by a change of the white powder to lavender, which starts in three minutes and lasts for five minutes. As the disease progresses, the test results in the powder turning a dark purple. Colostrum is not suitable for testing as it will not penetrate the powder.

RESULTS

Five cows definitely had ketosis as shown either by clinical signs or by subnormal or low normal blood sugar values (table 1). Since the cows were observed daily by a veterinarian, none were neglected to the point where blood sugar values became extremely low. The same data was compiled on 11 cows which did not have ketosis (table 2).

The plasma, urine, and milk from the 5 cows with ketosis all showed ketone reactions with this powder, but the urine reactions were always most pronounced.

The urine of the 11 control cows all showed pronounced ketone reactions, regardless of whether the cows were normal, had recently freshened, or had well-developed diseases other than ketosis.

Cow 4 was in a mild ketosis phase as indicated by the trace reaction in the milk. The milk of the other 10 cows was negative and they did not develop ketosis.

CONCLUSION

Practitioners should learn to conduct this test on milk, and then teach the herdsmen to test the milk of fresh cows and call them at the first sign of a lavender reaction. This would make it possible to treat cows at the onset of ketosis, rather

than having treatment delayed until they stop eating, drop in milk production, or have an odor of acetone on their breath.

Listeriosis in the Turkey — Two Case Reports

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MARY L. MAYER, M.S.

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Although naturally occurring listeriosis has been reported in several species of birds throughout the world, no reference to the occurrence of the disease in turkeys has been found.

CASE REPORTS

Case 1.—In September, 1956, 1 turkey from a flock of 1,600 was submitted to the poultry diagnostic laboratory at Michigan State University. Four birds from this flock of 18-week-old turkeys had died in a period of three days. Each showed neurological disturbances characterized by torticollis and coarse tremors of the skeletal muscles. Profound depression developed rapidly, with death resulting in a few hours.

Necropsy revealed no gross pathological changes with the exception of a mild hyperemia of the cerebral hemispheres. A direct blood smear was stained by the Gram technique and examined microscopically. The blood picture appeared to be grossly normal; no bacteria were seen. A blood agar plate was inoculated with material from the brain. After 24 hours' incubation at 37 C., a heavy mixed growth of bacteria was noticed on the plate. Gram-positive cocci were present as well as a Gram-variable bacillus. This bacillus produced a small, hemolytic colony on blood agar. When transferred to tryptose agar plates, this organism produced smooth, circular colonies which were bluish by transmitted light. Although this organism was motile in 48 hours at room temperature, it proved to be nonmotile at 37 C. Acid was produced readily from dextrose and maltose, and slowly from lactose and sucrose. Mannitol was not fermented; indol and hydrogen sulfide were not produced. The organism was identified as *Listeria monocytogenes*.

From the Department of Microbiology and Public Health, Michigan State University, East Lansing.

*Laboratory work was done by Laura Bramble, technician at New Bolton Center, veterinary research center of the University of Pennsylvania, Kennett Square.

†Denco (Denver Chemical Manufacturing Co., Inc.) is composed of sodium carbonate, ammonium sulfate, and sodium nitroprusside in anhydrous form. In the presence of acetone, the white powder will turn some shade of purple, the intensity of the color depending on the amount of acetone.

Prior to this diagnosis, the birds were fed a ration containing furazolidone (4 lb./ton) because *Salmonella muenchen* had been isolated from birds in the flock four months previously. At the time of the laboratory diagnosis, the farm was visited; mortalities had ceased and none of the birds were showing neurological disturbances. No livestock other than turkeys had been kept on the premises for at least five years.

Case 2.—In October, 1956, 15 birds from a flock of 500 in northern Indiana, died in one week. No antemortem signs of illness had appeared. The bird submitted for necropsy had died a few hours before arrival at the laboratory. The only lesions observed were white necrotic foci on the liver and greenish discoloration of the lungs. The pulmonary changes were presumed to be due to early postmortem decomposition. Tissues from the liver, heart, and spleen were streaked onto blood agar plates and SS agar. After 24 hours, an organism was isolated in pure culture from the blood agar. The biochemical and morphological properties appeared to be identical to the organism isolated from the first case. A tryptose broth culture was inoculated on the conjunctiva of a rabbit with a cotton swab. At 48 hours, a mucopurulent conjunctivitis was noticed.

DISCUSSION

An interesting feature of these 2 cases is the scarcity of visceral lesions. *Listeria* causes a septicemia in chickens. Massive necrosis of the myocardium has been described as a distinctive lesion in both naturally and artificially infected chickens.^{5,6,7} The myocardial damage was not produced experimentally unless five to seven days elapsed before death. No heart lesions were present in either of the turkeys presented for diagnosis. Neither was monocyctosis observed in these turkeys.

Necrotic foci in the liver had been observed more commonly than myocardial lesions.^{6,8} Focal necrosis of the liver was present in 1 of the turkeys submitted.

Neurological disturbances are not characteristic for fowl although they have been reported in geese.^{1,4,9} One of the turkeys described above exhibited severe torticollis and coarse tremors.

Since listeriosis appears to have been self-limiting in these two flocks, the sig-

nificance of this disease in turkeys is not apparent at this time.

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Erysipelas in Turkeys.—When different methods of infecting turkeys with culture and with liver substances from infective birds were tried, intravenous inoculation caused 100 per cent mortality, intramuscular injections 70 to 80 per cent; aerosols 20 per cent; feeding failed completely; and the results from subcutaneous injection, feather follicle inoculation, tracheal or conjunctival sac instillation were uncertain. Transmission by pen contact failed.

When poults 8 to 12 weeks old were given a commercial bacterin, the death rate was 28 per cent for those vaccinated and 84 per cent for the controls when challenged 15 weeks later; and 42 per cent for those vaccinated, and 71 per cent for the controls when challenged after 19 weeks.

When various antibiotics and three sulfonamides were given, in feed or water, to young turkeys experimentally infected with erysipelas, the best results were obtained with procaine penicillin which reduced the mortality by 90 per cent over untreated birds.—C. I. Boyer and J. A. Brown in Rep. New York State Veterinary College (1956): 33.

If any dog kills or injures livestock in New Mexico, the owner is liable for all damages and the dog must be killed.—New Mexico Vet. Rep. (June, 1957).

Canine Filariasis in the Far East

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Capt. WILLIAM G. RICE, M.C., U.S. ARMY; Col. BENJAMIN F. LEACH, V.C., U.S.A.F.

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ONE OF THE PRINCIPAL difficulties confronted by the United States Air Force in the acquisition of sentry dogs in the Far East is the high incidence of canine filariasis caused by *Dirofilaria immitis*. Because this disease is enzootic, a program was initiated to evaluate an arsenical preparation manufactured in Japan.

LIFE CYCLE

The adult parasite, a creamy white nematode, normally lives in the right ventricle of the heart or in the pulmonary artery (fig. 1). The males measure about 16 cm., the females about 25 cm., in length. Following copulation, the females release large numbers of unsheathed microfilariae, 200 to 300 μ in length, into the peripheral circulation. The microfilariae are found widely disseminated throughout the bloodstream but are most numerous in the lungs, and are frequently found only there.

When a blood meal containing larvae is ingested by a mosquito (*Culex*, *Anopheles*, *Aedes*, *Myzorrhynchus*),⁵ the larvae develop, in the malpighian tubules of the host, into the infective filariform larvae.

The mosquito is a proved vector of the parasite and the dog flea *Ctenocephalides felis* has been suspected by several workers. Twelve fleas were found that harbored various intermediate larval stages¹ and advanced stages of larval development were also found in fleas.⁶ At present, no work is known in which the dog flea has been successfully employed as the extramammalian host.

MATERIALS AND METHODS

Animals used in these trials were mongrel dogs selected at random from a public dog pound near Tokyo, Japan. Those that had a microfilaremia, as demonstrated by a direct smear or a concentration technique, and that were free of signs of contagious diseases were used with little regard to their general malnutrition or to the presence of other internal parasites. They were moved to the Far East Air Force Sentry Dog Training Center where each dog was chained to an individual wooden kennel,

on soil, and was allowed to exercise at will within the limits of its leash. Each was given anti-canine distemper serum immediately, and modified live virus distemper vaccine 14 to 21 days later. Throughout the trial period, all were fed a highly nutritive diet supplemented with brewer's yeast. Tetrachloroethylene was given orally for intestinal parasites eight days prior to treatment; however, some dogs still possessed subclinical infection of hookworms and cestodes. A marked improvement in condition was noticed during the three weeks prior to initiation of treatment.

A Japanese-manufactured drug, Filarsen (active ingredient: dichlorophenarsine HCl, 20.4%; total arsenic, 5.3%), was injected intravenously in the following dosages: group 1 (16 dogs) 4 mg. per kilogram of body weight daily for three days; group 2 (9 dogs) 3 mg. per kilogram daily for three days; and group 3 (9 dogs) 4 mg. per kilogram each week for three weeks. Group 1 had 3 untreated-infected and 4 treated-uninfected control animals. Since no changes were observed in group 1 control animals, controls were omitted in groups 2 and 3.

Most of the animals were killed for necropsy by intravenous injection of saturated solution of magnesium sulfate; some, however, were electrocuted. Necropsies and histological examinations were performed by pathologists⁸ of the 406th Medical General Laboratory at the following post-treatment periods: group 1 dogs at two, four, and eight weeks; the others at about four weeks.

RESULTS

Manifestations of intoxication from the arsenical preparation were indicated by prompt regurgitation and defecation. These reactions, observed in nearly all the experimental animals, were relatively mild and of short duration. One dog showed an acute syndrome of nephrosis. The exact cause of this condition remains unknown.

At necropsy, the following parasite mortality and average worm burden per dog were found: of 4 dogs two weeks after treatment (76.19% parasite mortality, 5.25 av. worms/dog); of 4 dogs four weeks after treatment (81.81% parasite mortality, 2.75 av. worms/dog); of 7 dogs eight weeks after treatment (94.11% parasite mortality, 2.42 av. worms/dog). Two dead adult heartworms were found in 1 dog

From the Western Washington Experiment Station, Puyallup (Balch); University of California, Los Angeles (Fonseca); Mount Carmel Hospital, Columbus, Ohio (Rice); Gunter Air Force Base, Ala. (Leach).

*Capt. William Rice, M.C.; Capt. William Meriwether, M.C.; and Capt. Albert Warrens, M.C.

which died five days following treatment.

The findings in groups 1, 2, and 3 are tabulated (table 1). In group 1, the mean adult parasite death rate was 84.3 per cent. Five of the 8 living adult worms were recovered from 1 animal two weeks after treatment. These were only slightly motile, suggesting that they probably would have died at a later time. If so, the mean rate of kill would have been 93.9 per cent, which is close to the results in group 2 (91.2%). Although dogs in group 2 were given only three-quarters of the dosage of group 1, the results were comparable.

The treatment of severely infected animals presents many difficulties, the principal one being heart failure due to substantial blockage of the pulmonary artery with killed parasites. It appeared feasible to circumvent these difficulties by utilizing the normal dosage (4 mg./kg.) once per week, killing part of the worms each time. In group 3 this procedure resulted in a 50 per cent rate of kill (0 to 100%). There was no correlation between worm burden and mortality.

Pathological Findings.—The adult *D. immitis* normally maintains its position in the right ventricle by coiling itself around the chordae tendineae of the tricuspid valve and around the bodies of adjacent worms. In massive infections, the entire right side of the heart may bulge with from 75 to 120 adults, which often extend into the right atrium, the vena cava, or the pulmonary artery. The local effects of the adult filariae on the heart are usually limited to a slight fibrous thickening of the chordae tendineae and the leaflets of the tricuspid valve. In cases in which a local inflammatory reaction has occurred, the adult filariae have been found dead. In 1 dog, there was marked fibrosis and calcification of the tricuspid valve. Microscopically, fragments of necrotic worms were seen surrounded by fibrous connective tissue which had become partially calcified.

The mechanical effects of the mass of adult worms upon the circulatory system can be profound. Animals with long-standing infections often show marked ascites, apparently as a result of increased venous pressure. Although cirrhosis has been reported in such cases, it has not been observed in the present group of animals. The cause of the cirrhosis may be similar to that which occurs in man in cases of "cardiac cirrhosis" due to chronic passive

TABLE 1.—Effect of an Arsenical Agent on *Dirofilaria immitis* Infection in Dogs

Dogs used		Status		Dosage		Frequency		Worms recovered		Worms dead	
		No.						Total	Av./dog	(No.)	(%)
Group 1											
Treated-	16	4	Once daily	x	3	51	3.18	43.0	84.3		
infected											
Untreated-	3	0	—			60	20.00	0	—		
infected											
Treated	4	4	Once daily	x	3	0	—	—	—		
uninfected											
Group 2											
Treated-	9	3	Once daily	x	3	34	3.77	31.0	91.2		
infected											
Group 3											
Treated-	9	4	Once weekly	x	3	101	11.22	51.0	50.4		
infected											

congestion of the liver. In many dogs a granular, pebbly thickening of the intima of the pulmonary artery and its branches has been noticed, apparently due to the local traumatizing effect of the worms. Pulmonary manifestations occur as the adult filarial worms die, either naturally or as a result of treatment, and are carried as emboli into the pulmonary circulation. Here they incite a granulomatous reaction in the wall of the vessel and in the surrounding lung parenchyma (fig. 2). The thrombi, which form in the vessel lumens around the worms (fig. 3), eventually disintegrate and a microscopic section may reveal only foci of granulomatous reaction without recognizable filaria. No significant changes were found in other organs as a result of the presence of adult filariae.

Any treatment which would eliminate



Fig. 1.—Incised right ventricle and pulmonary artery of a dog showing adult *Dirofilaria immitis* parasites.

part or all of the adult filariae may be desirable but, in massive infections, killing filariae may not save the animal due to the large number of resultant pulmonary arterial thromboses. It has been observed in man that occlusion of 50 to 75 per cent of pulmonary arterial circulation leads to chronic cor pulmonale. Added to this, in these dogs, would be the obstructive effect of any remaining worms in the right ventricle. In mild to moderate infections, treatment would probably not affect pulmonary arterial circulation to the extent of incapacitating the animal. Of the 34 infected-treated animals, none had massive infections and none showed more than a moderate degree of pulmonary arterial thrombosis following treatment. Probably, none of these animals would have displayed evidence of pulmonary hypertension had they lived.

Laboratory Findings.—Prior to and after therapy, blood counts and liver function tests were performed on group 1 dogs. These included: white blood cell count, red blood cell count, differential counts, and hemoglobin determinations. There were

some individual changes but no significant mean changes. The liver function tests included: total protein, albumin, globulin, bilirubin, *gamma* globulin, thymol turbidity, acid and alkaline phosphatase determinations. Changes significant by the "t" test were observed in total protein, albumin, and globulin but these were likely referable to dehydration. Groups 2 and 3 were examined for liver function by the bromsulfalein test, but nothing significant was found.

Microfilariae persisted in the peripheral blood following treatment since arsenicals are not destructive to them. There was little correlation between the microfilariae count and the number of adult worms recovered at necropsy. One sentry dog that died suddenly harbored 115 adult dirofilariae, but was negative for microfilariae on two blood tests within 90 days prior to death.

DISCUSSION

One primary difficulty in treating dogs for *D. immitis* infection is that no presently known agent is effective against both the adult and larval forms of the parasite. Numerous investigations have been reported on the use of various polyvalent antimony compounds. These compounds, in general, quickly kill the microfilariae, but effect only sterilization of the adults. It has

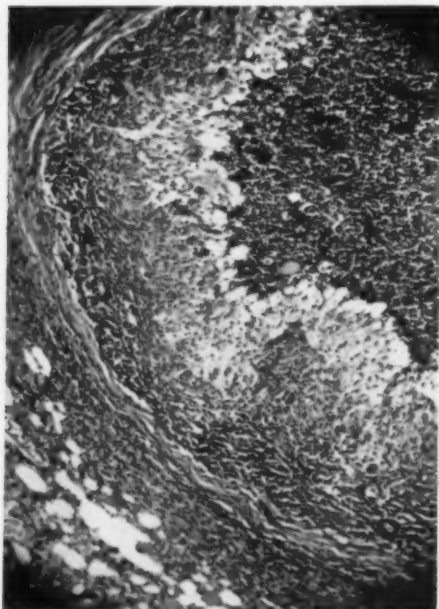


Fig. 2—Granulomatous reaction in the wall of a pulmonary artery of a dog, caused by dead *Dirofilaria immitis* parasites. x 60.

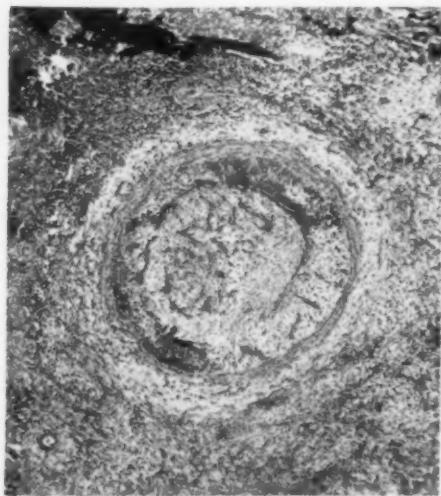


Fig. 3—Pulmonary artery of a dog which has undergone thrombosis and partial recanalization, due to the presence of the dead parasites.

been demonstrated that diethylcarbamazine citrate (Hetrazan*) produces a marked reduction in the microfilariae, but is rarely toxic to the adult. On the other hand, arsenical compounds, when given intravenously, will kill the adult worm but not the microfilariae.⁶

The results produced by the Japanese drug closely parallel the findings with other arsenicals in that it is toxic to the adult, but is not destructive to the microfilariae. From this study, it may be concluded that animals suffering a mild to moderate infection can safely be treated with this product but, in a massive infection, death may result from numerous pulmonary arterial thromboses. The largest number of adult parasites found dead in a dog in these trials was 14 and the average was 5.1.

The undesirability of treating dogs with massive infections is illustrated by the following clinical case. A sentry dog (F-319) was given the drug (4 mg./kg. daily for three days); when it did not respond, it was killed. No live adult worms were found, but the right ventricle appeared somewhat dilated and the wall thickened. There were masses of worms in the pulmonary arterial system surrounded by thrombi. Practically the entire arterial system of the right lung was occluded by the worms. Microscopically, several of the worms were found to be partially calcified. Small abscesses were found in the lungs.

The liver showed a remarkable degree of chronic passive congestion with marked loss of liver cells in the central portions of the lobules. Fibrosis was minimal in these areas. It was felt by the observer (W.G.R.) that the signs exhibited by this animal could be explained on the basis of a chronic cor pulmonale due to the large number of occlusions of the pulmonary arterial tree by dead worms. The chronic passive congestion of the liver was severe and eventually the liver probably would have developed a so-called "cardiac cirrhosis."

The presence of an adult filarial worm penetrating the visceral pleura and extending into the pleural cavity points to another possible complication of this parasitism, i.e., pneumothorax.

The terminal effects of the pulmonary thrombi upon the circulatory system may not be entirely apparent until a considerable time after treatment. One dog which

was given the Japanese drug (4 mg./kg. for 3 days) in January, 1954, three months later was given diethylcarbamazine citrate for the microfilariasis. Respiratory distress followed use of the first drug. Due to advanced ascites and debilitation, the dog was killed on July 1, 1954. The abdominal cavity contained approximately 6 liters of fluid and there were large plaques of fibrin over the surface of the liver. Also present were severe obstructions of the pulmonary arteries and, although no worms were distinguishable in these thrombi, it is probable that they could not be identified because of resorption and organization. Probably as sequelae to the pulmonary obstruction, there was dilatation of the right side of the heart and hypertrophy, ascites, and marked passive congestion of the liver.

SUMMARY

1) A Japanese-manufactured arsenical preparation (Filarsen) was administered to 34-lb. dogs naturally infected with *Dirofilaria immitis* and was found to be about 90 per cent effective against the adult worm, was relatively nontoxic, and required only three days of treatment.

2) Mild to moderate infections may be safely treated with this drug, but treating massive infections may result in heart failure due to pulmonary obstruction.

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*Lederle Laboratories

Nutrition

A Dietary Cause of Hair Loss in Bahamian Livestock

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On a recent assignment in the Bahama Islands, a curious condition was observed in some native horses (fig. 1); many were devoid of long hair, i.e., the mane, tail, and foretop, as if they had been closely clipped over these areas. Due to the lack of grass, the diet of many animals had consisted principally of the leaves and pods of a small leguminous tree known as "jumbay." The plant (fig. 2), identified as *Leu-*



Fig. 1—Bahamian horse showing typical loss of hair, due to dietary deficiency.

caena glauca (L.) Benth.,* is eaten readily by all herbivores. Several weeks on this diet are required for the hair loss to occur in horses, and a change of diet results in regrowth of the hair.

According to native superstition, swine having abundant quantities of long hair on their bodies are unthrifty. Consequently, the hogs are confined and fed a diet of jumbay until the hair is removed. At this point, the animals are again considered to be thrifty.

It is claimed that the coat of the native sheep and goats is unaffected by a jumbay

diet. Because of the few cattle on this particular island, the effects of jumbay in cattle could not be determined.

Regardless of the species observed, no other effect was noticeable in visual examination of the animals. Although chron-



Fig. 2—The jumbay tree in the Bahama Islands.

ic selenium poisoning is a possible cause, concurrent signs of this malady were absent and, according to local agriculturists, the selenium content of the island soil is low or absent.

A limited search has failed to reveal any reference to this phenomenon and the causative agent is unknown to the author.

Stilbestrol in Feeding Cattle.—Research has indicated that gains have averaged an increase of 15 per cent (0 to 37%), and feed savings have averaged 10 per cent (0 to 20%) in cattle whose feed has been supplemented with stilbestrol. The hormone may affect the anterior pituitary gland, speeding the rate of growth, or it may have an effect on the intestinal bacteria. (It has a bacteriostatic effect on such bacteria, especially the gram-positive ones.) The only difference in carcass grade is a tendency to be leaner. There are no residual effects and no side effects when the hormone is fed at recommended levels. However, when implanted, stilbestrol may cause damaging changes in the reproductive organs, especially in heifers. Gains in calves was increased up to 10 per cent when fed stilbestrol.—F. O. Gossett, Indiana.

Dr. Mullenax is a general practitioner in Evergreen, Colo.

*Identification was made by Dr. H. D. Harrington, botanist and curator of the herbarium, and Mr. Bruno Klinger, botanist and professor, Colorado State University, Fort Collins, Colo.

The 1955-1956 Survey of Veterinary Practitioners—Part 3

The survey conducted by the AVMA Committee on Veterinary Service during 1956 (Kilpatrick Report) was designed to bring together some basic information on usual fees charged for veterinary services.

The Committee recognized that no attempt should be made to establish minimum or maximum fees on a nation-wide or area basis. Knowing the fee pattern of an individual or of a number of practitioners in an area, however, permits us to come a little closer to answering questions on the economics of veterinary practice when correlated with other measurements of income and expense.

FEES SHOW WIDE VARIATION

Possibly the first thing revealed by the study is that there is definitely no uniformity in fees charged. For example, rabies immunization fees ranged from less than \$2.00, for 13 per cent of those reporting, to \$3.50 or over for 20 per cent. Approximately half of those who reported charged less than \$3.00.

For a case of parturient paresis, about one fourth charged \$5.00 or less, one fourth charged \$8.00 or more, and approximately one half charged between \$6.00 and \$7.00.

RELATIONSHIP OF FEES TO NET INCOME

Of immediate interest is the question "Do veterinarians who charge higher fees have higher net incomes?"

For comparative purposes, an index of fees charged for selected large animal services and one for selected small animal services was calculated. An index of 100 is the average for all fees reported in these selected categories.

Veterinarians whose fee index was between 60 and 80 were considered in the low fee group; those whose index was 120 to 150 were in the high group; and those with an index ranging from 80 to 120 were in the average fee group.

The fees charged for large and small animal services follow different patterns in their relationship to net income. Those for large animal services (fig. 1) were more uniform, a higher percentage falling in the average fee group. However, there is no apparent general relationship between the fees charged by large animal practitioners

and their net income. For instance, of those with an annual net income of \$5,000, about 25 per cent charged high fees and 40 per cent charged low fees; approximately the same ratio as for those with an income of \$15,000 or of \$27,000.

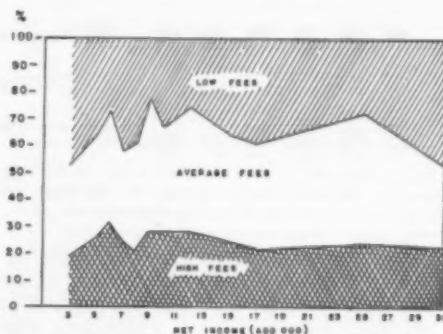


Fig. 1—Relationship between fees charged and net income. Large animal fee index.

The sizeable number (47%) of large animal practitioners who charge relatively low fees, yet are in the highest net income group, is of interest. It probably illustrates the effect of the principle of "diminishing returns" when economic factors are a major influence.

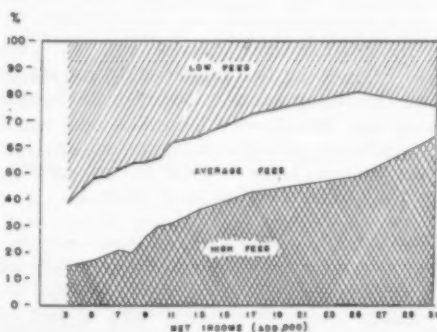


Fig. 2—Relationship between fees charged and net income. Small animal fee index.

Conversely, the small animal fee index (fig. 2) shows a progressively higher percentage of practitioners charging high fees as the net income line rises. However, nearly one fourth of those who reported incomes in the \$30,000 range charged low fees for their services and 15 per cent of

Parts 1 and 2 of this Survey appear in the August 1 and August 15 issues, respectively.

the high group were in the lowest net income bracket.

REGIONAL DIFFERENCES IN FEES

The number of veterinarians who charge low, average, and high fees varies considerably by regions.

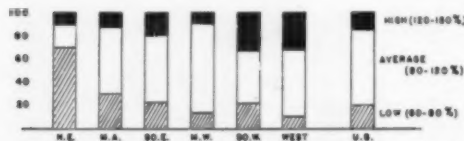


Fig. 3—Percentage of total veterinarians having high, average, and low fees compared with the large animal fee index—by regions.

Fees for services on large animals (fig. 3) are lowest in the northeastern and the middle Atlantic states, and highest in the Southwest and West. These fees were most uniform in the Midwest where over 70 per cent charged average fees.



Fig. 4—Percentage of total veterinarians having high, average, and low fees compared with the small animal fee index—by regions.

In small animal practice (fig. 4), fees are highest in the middle Atlantic states and the Northeast and lowest in the Southwest and Midwest. The relatively small numbers of veterinarians who charge low fees for both large or small animal services in the western region is of interest.

RATIONALIZING ON FEES

Perhaps no subject is of more general interest to members of a profession, especially the younger ones, than is that of fees. Since man must have bread, he must be concerned about income, but he should not forget that "man shall not live by bread alone." There is a great tendency for people to measure success by income rather than by benefits rendered. This would reverse the old adage that "It is more blessed to give than to receive."

In an economy of free enterprise, there must be competition, but in a profession it should be based on quality of service ra-

ther than on size of fees. Obviously, the limits on fee size will vary with such factors as the type of clientele but, other things being equal, the most "beaten path" will be to the door of him who serves best at reasonable fees. Also, other things being equal, he will serve best whose first concern is superior service to his patients rather than superior baits for attracting owners. The more spent for such bait, the higher must be the charge to obtain the same "net" fee.

With regard to superior service, it can not be overemphasized that the quality of therapy is more important than the quantity applied. And, obviously the more time or material used per case the smaller the "net" from the fee. Why excise an abscess if incising will suffice? Likewise, why fill a patient with antibiotics and drugs if only an enema is needed? When the diagnosis is accurate, will not simple but proper therapy be as effective as application of the most glamorous drugs and the most elaborate techniques?

In rural practice, the fee basis has slowly changed. In the days of the horse and buggy, the fees were based on a mileage rate since one of the major investments was in travel time. Now, with modern roads and vehicles, the time and material invested in actual treatment of the patient is a major fee determinant.

In recent years, the advantages of using a hospital in large animal practice have been re-evaluated. Whether they are economical depends today, as it did in the horse era, largely on their saving of travel time. Also on whether the possibly improved treatments, plus the avoidance of nursing, will compensate the owner for his additional expenses and inconveniences in trucking the animal to the hospital.

When all factors are considered, veterinary practice is still a markedly individualistic undertaking which can conform to general principles, but it should not be expected that the fees can be fixed by a rigid schedule. However, charging "all the traffic will bear" and "cut-rate" policies should be condemned. Either discredits the individual as well as the profession.

Correction—Survey of Veterinary Practitioners—Part 1.—In the editorial, "The 1955-1956 Survey of Veterinary Practitioners—Part 1" (Aug. 1, 1957, JOURNAL, p. 157), the second line of the first column should read *more than 50 per cent*.

ABSTRACTS

Production and Use of Germ-Free Animals

The value of germ-free life to experimental biology and medicine is that it is an extension of the pure culture concept. Basic to the use of germ-free life, is the study of life as such under these conditions. At the present time, germ-free animals can be obtained and some species raised through generations, thus making it possible to produce sufficient numbers of standard animals.

Apparatus is commercially available which permits units to be assembled in systems and in which animals can be held throughout their lives. These are the Reyniers System I and the Reyniers-Trexler large scale system. Whatever apparatus is used, it must permit routines to be established. In addition, germ-free animals can be transported for long distances, making it possible to establish central colonies to supply small germ-free installations and so permit widespread use of the technique. The germ-free animal is no longer a laboratory curiosity and has been studied and used in a sufficient variety of problems to illustrate its value. The future seems to lie with the establishment of central colonies and continued improvement of apparatus. —[James A. Reyniers: *The Production and Use of Germ-Free Animals in Experimental Biology and Medicine*. Am. J. Vet. Res., 18, (July 1957): 678-687.]

A Method for Evaluating Enzymes

A modification of the Klett-Summerson method for the colorimetric determination of protein in cerebrospinal fluid was adapted to the evaluation of the percentage of degradation of rabbit brain protein occasioned by five proteolytic enzymes. The modification consisted of making four colorimetric readings (Klett-Summerson photoelectric colorimeter, model 900.3) of 1:100 dilutions of the substrate, subjected to proteolysis, at 0 hours and at various time intervals thereafter.

Significant decreases in the protein content of the substrate were produced by proteolysis with trypsin, rhozyme P-11, protease 15, protease (trypsin), and proteinase A. With each enzyme, no detectable proteolysis occurred until after two hours at 37 C. at pH 7.4 to 7.6. No additional increase in the amount of proteolysis occurred after four hours. The proteolytic activity of the enzymes was not detectably influenced by the presence of antibiotics, either alone or in the presence of the substrate. —[S. W. Thompson: *A Turbidimetric Method for the Evaluation of Proteolytic Enzymes*. Am. J. Vet. Res., 18, (July, 1957): 693-697.]

Cheek Teeth of Cattle

The cheek teeth of cattle were studied from the standpoint of morphology based on cusps and on the extent to which molarization had progressed. The molar pattern has four major cusps set in

pairs as anterior and posterior units. Molarization proceeds serially in an anterior direction. The end point of molarization has been achieved through the upper maxillary deciduous molar dm^1 , and the lower mandibular deciduous molar dm^4 . The other deciduous molars and the premolars are not typically molar in type. The process has advanced to a somewhat greater degree in the upper than in the lower deciduous molars. The premolars of both jaws are less molariform than the deciduous molars. —[N. D. Jones and L. E. St. Clair: *The Cheek Teeth of Cattle*. Am. J. Vet. Res., 18, (July, 1957): 536-542.]

Behavior of Spermatozoa in Luminal Fluids of Bovine Female Genitalia

Reproductive organs were obtained from 16 cows slaughtered at known stages of the estrous cycle and from 18 cows at unknown stages. Cervicovaginal mucus, uterine fluid, oviduct fluid, and follicular fluid were collected from these organs and used as diluents for bull semen. On the average, under relatively anaerobic conditions at 37 C., spermatozoa remained motile about nine hours in mucus, seven hours in uterine fluid, 12 hours in oviduct fluid, and 19 hours in follicular fluid.

In general, spermatozoa lived longer in mucus and uterine fluid from cows in or near estrus than in the same fluids at other stages of the cycle. Oxygen uptake by spermatozoa was highest in follicular fluid followed by oviduct fluid, mucus, and uterine fluid, respectively. This is the same decreasing order shown by these fluids in maintaining the viability of spermatozoa. Agglutination of spermatozoa was frequently observed in all of the genital tract fluids studied but was most frequent in follicular fluid. No cyclic variation in this respect was apparent. —[Dunward Olds and N. L. Van Demark: *The Behavior of Spermatozoa in Luminal Fluids of Bovine Female Genitalia*. Am. J. Vet. Res., 18, (July, 1957): 603-607.]

Anaplasmosis and Eperythrozoonosis in Cattle

An interference phenomenon (reciprocal) between anaplasmosis and eperythrozoonosis in splenectomized calves has been recognized. Eperythrozoonosis and anaplasmosis are two separate and distinct disease entities of splenectomized cattle. Apparently the former, though widespread in Louisiana, does not cause clinical signs in non-splenectomized cattle or, if such signs do occur, they have not been recognized.

Anaplasmosis has been a problem to the cattle industry for many years. The average incubation period for anaplasmosis, when there was no interference from eperythrozoonosis, was 14 days in the splenectomized calf given 5 ml. of anaplasmosis inoculum. Whichever of the two infections was dominant in the carrier animal would be established first in the recipient anaplasmosis-eperythrozoonosis-susceptible calf. If the mild form of eperythrozoonosis was established first, the ana-

plasmosis-incubation period might be prolonged 19 to 61 days. However, if eperythrozoonosis was acute and the splenectomized calf survived, anaplasmosis might be blocked out indefinitely unless a second or third inoculation of *Anaplasma*-infected blood was given. If acute anaplasmosis was the initial infection, and the splenectomized calf survived, it was replaced by eperythrozoonosis. In other calves, it appeared that the two diseases existed simultaneously. Blood smears from some splenectomized calves indicated that the etiological agents of the two diseases competed for supremacy for several days before one or the other became dominant.—[L. E. Foote, Helen E. Levy, Betty J. Torbert, and W. T. Oglesby: *Interference Between Anaplasmosis and Eperythrozoonosis in Splenectomized Cattle*. *Am. J. Vet. Res.*, 18, (July, 1957): 556-559.]

Metabolism of Phenothiazine in Dairy Calves

The methods of analysis of phenothiazine and its derivatives in the digestive tract contents of calves are described. The first appearance of phenothiazine occurred in the rumen within one hour post-treatment. First detection of phenothiazine in the feces occurred at ten hours post-treatment. At 80 hours post-treatment, no traces of phenothiazine were detected but phenothiazone was detected in the rumen, reticulum, omasum, abomasum, mixed jejunum ileum, and colon. No traces of drug were detected at 120 hours post-treatment.—[T. Ellison and A. C. Todd: *The Metabolism of Phenothiazine*, N. F., in *Dairy Calves I. Chronological Distribution of Drug in Digestive Tract Contents*. *Am. J. Vet. Res.*, 18, (July, 1957): 519-529.]

Physiological Aspects of Fluids in Female Bovine Genitalia

This review summarizes the available data on the biochemistry, physiological significance, and histological production of fluids found in female reproductive organs. Many species are mentioned, but special attention is devoted to the cow.—[D. Olds and N. L. Van Demark: *Physiological Aspects of Fluids in Female Genitalia with Special Reference to Cattle—A Review*. *Am. J. Vet. Res.*, 18, (July, 1957): 587-602.]

Pharmacology of Sulfaquinoxaline in Dairy Cattle

Sulfaquinoxaline has a half-life in blood and plasma of approximately three to four hours following intravenous doses of 71 and 143 mg. per kilogram of body weight. The volume of distribution averaged 40 per cent of the body weight. Cerebrospinal fluid and milk concentrations of the drug were about 15 per cent and 30 per cent, respectively, of the corresponding plasma levels. The degree of acetylation in blood ranged from 20 to 50 per cent, while in urine it averaged 39 per cent. In addition to the parent drug and acetylated

derivative, an oxidation product, 3-hydroxy-2 sulfanilamidoquinoxaline, was found in urine. Toxic effects of the drug included ataxia, partial posterior paralysis, and collapse. Kidney effects included crystalluria, tubular damage, and necrosis following intravenous or oral administration. Prolonged prothrombin times were seen following doses of 143 mg. per kilogram of body weight.—[C. M. Stowe, D. Pallesen, and W. Hartman: *Studies on the Pharmacology of Sulfaquinoxaline in Dairy Cattle*. *Am. J. Vet. Res.*, 18, (July, 1957): 511-518.]

Blood Changes in African Swine Fever

Pigs infected with African swine fever developed a leukopenia beginning on the fourth day after exposure. The leukopenia was associated with a highly significant increase in the percentage of neutrophils, especially the juvenile forms, and a decrease in the percentage of lymphocytes. The leukopenia was indistinguishable from that associated with hog cholera infections. The erythrocyte counts, hemoglobin values, packed cell volumes, and percentages of eosinophils, basophils, and monocytes remained normal. Sedimentation rates were erratic.—[D. E. DeTray and G. R. Scott: *Blood Changes in African Swine Fever*. *Am. J. Vet. Res.*, 18, (July, 1957): 484-490.]

Piromen as a Pituitary-Adrenal Stimulant in Dogs

With the use of leukopenia, eosinopenia, and leukocytosis as indexes of adrenal cortical activity in the dog, evidence was obtained that the bacterial polysaccharide complex, Piromen,* is a potent stimulant for the pituitary-adrenal system. The degree of stimulation, when measured by the leukocyte response, showed a gradient proportional to the administered dose. Intravenous injection of 0.01 to 0.02 unit of the drug per kilogram of body weight elicited marked alteration in the circulating granulocytic elements; this activity was not accompanied by pyrogenic effects. Administration of 0.02 unit at weekly intervals did not lead to the development of refractoriness of response. Above such dosage levels, there was a graduated increase in body temperature in response to each increment, with intensified hematological response. The injection of 0.2 unit of Piromen brought significant stimulation of the reticuloendothelial system. The absence of untoward effects suggests that the drug may have promise as a safe means for stimulating pituitary-adrenal activity in animals.—[Bernard C. Wexler, Jean L. Faehrich, Margaret E. Weiss, and Oliver D. Grace: *The Use of a Bacterial Polysaccharide (Piromen) as a Pituitary-Adrenal Stim-*

*Piromen, a sterile, nonprotein and nonantigenic bacterial polysaccharide complex, is prepared as a stable suspension in 1/6 M sodium r-lactate containing 1:10,000 parts of thimerosal. It is a product of Travenol Laboratories, Inc., Morton Grove, Ill.

ulant in Dogs. *Am. J. Vet. Res.*, 18, (July, 1957): 642-647.]

Distemper Vaccine of Avian Origin

An aqueous "atomized" distemper vaccine of avian origin was evaluated in a total of 1,390 mink on two separate ranches and was found capable of eliciting complement-fixing antibodies in 68 to 100 per cent of animals, following a single application. A minimum exposure time of 20 seconds per animal was found necessary when the vaccine was applied under nitrogen pressure by means of a DeVilbiss 40 nebulizer at a delivery rate of 5 ml. of vaccine in four to five minutes.—[D. W. Johnson, V. J. Cabasso, K. Huffman, and M. R. Stebbins: "Atomized" Distemper Vaccine of Avian Origin. II. Field Experience in Mink. *Am. J. Vet. Res.*, 18, (July, 1957): 668-671.]

Exteriorization of Ureters of the Chicken

Long-term metabolism studies in chickens have been handicapped due to the common excretory pathway for urine and feces. An operative technique for exteriorization of the ureters just below the pygostyle is described and illustrated. The urine can be quantitatively collected free of fecal contamination and the feces can be quantitatively collected from a dropping pan. The surgery and urine collection does not interfere with normal egg production.—[J. M. Dixon and W. S. Wilkinson: *Surgical Technique for the Exteriorization of the Ureters of the Chicken*. *Am. J. Vet. Res.*, 18, (July, 1957): 665-667.]

BOOKS AND REPORTS

Clinical Toxicology of Commercial Products

Great difficulty is often encountered in dealing quickly and effectively with chemical poisoning when the toxic agent is unknown, if its tradename is known but not its ingredients, or if there is no known antidote. This reference book is intended to aid in surmounting the problem.

Included in the seven sections of this manual are: (a) a list of commercial products and their ingredients, (b) sample formulas of many types of products with an estimate of the toxicity of each formula, (c) toxicological information, including an estimate of the toxicity of individual ingredients, (d) recommendations for treatment, and (e) names and addresses of manufacturers.

The degree of toxicity of products is estimated by a "toxicity rating" which appears on the inside of the front and back covers, and the frontispiece is a chart illustrating the proper use of the manual under the various emergency conditions which occur.—[*Clinical Toxicology of Commercial Products—Acute Poisoning (Home and Farm)*. By M. W. Gleason, R. E. Gosselin, and H. C. Hodge. 1160 pages. The Williams & Wilkins Co., Baltimore, Md. 1957.]

Role of Carbon Dioxide in Metabolism

An intensive research on the role of carbon dioxide revealed that a small amount of carbon dioxide inhaled with air does not produce any visible change in the respiration; however, it does influence the metabolism of the organism. Carbohydrate metabolism is especially increased, resulting in an accelerated glycolytic, particularly glycogenolytic process of the liver and muscle glycogen, thus increasing the blood sugar level.

On the other hand, the mineral metabolism, particularly calcium metabolism, responded to the same dose of the inhaled air-carbon dioxide mixture in a reversed sense, reducing the blood calcium level about 0.5 to 2.0 mg./100 ml.

The phosphorus blood level did not show any marked deviation from normal. A further change which occurs in the general condition of experimental animals, after the inhalation of carbon dioxide, is lowering of the body temperature from 0.5 to 2.0 degrees centigrade.—[*The Role of Carbon Dioxide in the Metabolism of Organisms*. By F. Blum, 102 pages. 5 illustrations. Gustav Fischer, Verlag, Stuttgart, Germany. 1956. Price not given.]—F. KRAL.

Neurological Examination of the Dog

The main object of this excellent book is to present a systematic routine for examining a dog neurologically in order to arrive at a diagnosis. The procedures recommended result from the author's experiences and clinical observations in determining signs of the pathological changes in the nervous system. It is the first text on the subject in the English language.

Of the eleven chapters, the first nine deal with examination of the patient. The last two discuss the lesions responsible for the abnormal clinical signs. This information should assist the clinician in arriving at proper diagnoses, prognoses, and therapies.

All phases of neurology are discussed. The various neurological conditions are well described and illustrated. This text will prove useful as a reference for the practitioner, as well as the pathologist.—[*Neurologic Examination of the Dog*. By John T. McGrath. 181 pages. 120 illustrations. Lea and Febiger, 600 Washington Sq., Philadelphia, Pa. 1956. Price \$5.00.]—WAYNE H. RISER.

Korean Translation of Veterinary Pharmacology, Materia Medica and Therapeutics

Dr. Z. N. Lee, associate professor of pharmacology at the Veterinary College of Seoul National University, has translated into Korean Dr. H. J. Milk's book, "Veterinary Pharmacology, Materia Medica and Therapeutics." Dr. Lee spent nearly three years on this translation. The Korean edition contains 928 pages and provides for the first time since the war the translation of a major veterinary text from English into Korean.—JAMES A. GOURLAY.

THE NEWS

Dr. W. F. Guard Resigns—Dr. R. L. Rudy Appointed Chairman, Department of Veterinary Surgery, Ohio State

Dr. Willard F. Guard, professor and chairman of the Department of Veterinary Surgery at Ohio State University, asked to be relieved of the chairmanship so that he might devote his full time to teaching and to writing. He served as chairman of the Department from 1929 to 1942, and from 1947 until July 1, 1957.

Dr. Guard is currently working on a revision and enlargement of his textbook, "Surgical Principles and Techniques." First published in 1948, this book is now sold in 36 countries and is used in many English-speaking colleges of veterinary medicine.

The new chairman of the department of veterinary surgery is Dr. Richard L. Rudy, a staff member since 1944. Dr. Rudy received his D.V.M. degree at Ohio State in 1943, and his master's degree from the university in 1948.

Revision of Public Health Law Applies to Narcotics

The Public Health Law has been clarified to describe more adequately the term "hospital" as an institution which the Narcotic Control Section may approve for the use of narcotics.

The new law also includes a definition of "veterinary hospital" to provide a legal distinction between hospitals treating man and those treating animals.

A veterinary hospital is now defined as "an institution equipped with the technical facilities and technical personnel necessary for diagnosis and treatment of animals suffering from sickness and injury and which hospital is further approved by the Health Department to possess narcotic drugs which may be used only by veterinarians in their professional practice at the hospital."

Omega Tau Sigma International Meeting at University of Pennsylvania

On Nov. 7-9, 1957, Omega Tau Sigma will hold its annual international convention at the alpha chapter of the School of Veterinary Medicine, University of Pennsylvania, Philadelphia.

AMONG THE STATES AND PROVINCES

California

Alameda-Contra Costa Veterinary Medical Association.—The Alameda-Contra Costa V.M.

A. voted unanimously on June 28, 1957, to hold their meetings on alternate months with the meetings of the Bay Counties Veterinary Medical Association. This measure was adopted to facilitate attendance at all the meetings of both the local associations, making a combined total of only one meeting a month for their members.

The regular meetings of the Alameda-Contra Costa V.M.A. will continue on the fourth Wednesday in January, March, May, June, August, October, and November only.

• • •

Bay Counties Veterinary Medical Association.—The Bay Counties V.M.A. has established headquarters at 3004 Sixteenth St., San Francisco, with Mr. Herb Warren as executive secretary.

The officers for the coming year are: Drs. Irving M. Roberts, Oakland, president; Richard J. Tompkins, Oakland, vice-president; Maurice L. Boevers, Lafayette, secretary; Thomas D. Harris, Jr., San Mateo, treasurer.

The Bay Counties V.M.A. recently adopted a new constitution and bylaws in which the post of executive secretary was created.

Florida

Florida West Coast Veterinary Medical Association.—The regular meeting of the Florida West Coast V.M.A. was held at the Lighthouse Inn, St. Petersburg, July 10, 1957.

The program was highlighted by a film and talk by Dr. Hoyt C. Hall, Tampa, on the current procedure used in certain coronary conditions in man—Auxiliary Vascularization of the Heart by Prothesis.

Officers for the coming year are: Drs. R. F. Minnick, St. Petersburg, president; W. W. Cunningham, Pinellas Park, president-elect; R. L. Brutus, Hialeah, secretary-treasurer.

s/RICHARD L. BRUTUS, Secretary.

Georgia

Dr. Farr Retires.—Dr. Jesse R. Farr, inspector in charge, Federal Meat Inspection, Augusta, retired July 31, 1957. He served as inspector in charge at Augusta, Statesboro, and Savannah, Ga., and Aiken, Anderson, and Gafney, S. Car. Dr. Farr is now living at 1709 High Ridge Road, Lake Worth, Fla.

Indiana

Indiana-Illinois V.M.A.—The Indiana-Illinois Veterinary Medical Association held their annual picnic-meeting June 21, 1957, in Terre Haute, Ind.

Dr. George R. Burch of Allied Laboratories spoke on the progress made in research on virus diseases, and Dr. Lawrence M. Borst, Jr. presented his interpretation of the recently passed state rabies law.

The officers elected for the ensuing year are: Drs. Roy H. DeMotte, Odon, Ind., pres-

ident; Marvin Bratt, Jr., Terre Haute, president-elect; and Iverson C. Bell, Terre Haute, secretary-treasurer.

North Carolina



Dr. Robert Williams, president of the North Carolina V.M.A., presents the "Veterinarian of the Year" award to Dr. Milton M. Leonard of Asheville at the association's annual convention, June 26, 1957.

• • •

A New Amendment Calls for a Licensed Veterinarian to the State Board of Health.—An amendment to the public health laws of North Carolina was approved by the 1957 General Assembly, which calls for the appointment by the governor of a licensed veterinarian to the State Board of Health.

Special credit for the passage of this amendment is given to Dr. Ralph Williams, past-president of the North Carolina V.M.A., who, along with others, discussed the matter with the governor and the chairmen of the House and the Senate health committees.

Oregon

Ontario Veterinarian Gets State Post.—Governor Robert D. Holmes appointed Dr. L. M. Koger, Ontario, as a member of the state board of veterinary medical examiners, July 26, 1957.

Dr. Koger succeeds Dr. S. E. Philips, Medford, for a four-year term to expire July 23, 1961. Two current board members were re-appointed. They are: Drs. Clarence F. Milleson, Portland; and Carl R. Howarth, St. Helens.

Puerto Rico

Puerto Rican Superior Court Upholds Veterinary Practice Act.—In a ruling against the Secretary of Agriculture of Puerto Rico, dated July 15, 1957, the Superior Court of the Commonwealth of Puerto Rico ruled that only a technician duly authorized by the Puerto Rico Board of Veterinary Examiners can draw blood samples from cattle for brucellosis testing.

As the Practice Act of Puerto Rico refers only and exclusively to graduates from accredited veterinary schools, this ruling is interpreted as restricting brucellosis testing to veterinarians licensed in Puerto Rico.

The court action was on Civil Case No. 56-4373, Asociación Médico-Veterinaria de Puerto Rico, plaintiff, vs. Luis Rivera Santos as secretary of Agriculture and Commerce of Puerto Rico, defendant.

Tennessee

Tablet Unveiled in Commemoration of Dr. Tait Butler.—The editors and officers of the Progressive Farmer Company sponsored the unveiling of a tablet in commemoration of Dr. Tait Butler, veterinarian, editor, publisher, and agricultural leader, in the Tennessee Agricultural Hall of Fame of the State Capitol, Nashville, Tenn., Aug. 13, 1957.

Dr. Butler's daughter, Seta Butler York, unveiled the tablet, and Governor Frank Clement, made the acceptance speech on behalf of the commission.

A pioneer in agricultural journalism in the South, and an editor and publisher for 30 years, Dr. Butler is also credited with the first systematic eradication of the cattle tick on a large scale in the southern area.

FOREIGN NEWS

Brazil

Seventh Brazilian Veterinary Congress to Be Held in October.—The Veterinary Medical Association of Northeast Brazil has announced that the Seventh Brazilian Congress of Veterinary Medicine will be held in Recife, Pernambuco, Brazil, Oct. 12-19, 1957.

The program will cover a wide range of topics of practical and theoretical value, as well as some of the economic, cultural, and social developments in Brazil.

Further information concerning the program that the Congress is planning can be obtained from the organizing committee at the following address: Northeast Brazil Veterinary Medical Association, Caixa Postal 2505, Recife, Pernambuco, Brazil. Veterinary associations of other countries are invited to send representatives.

Germany

Justus Liebig University of Giessen Celebrates 350th Anniversary.—The Justus Liebig University of Giessen celebrated the 350th anniversary of its founding July 3-6, 1957. One of the oldest German universities, it opened a Department of Economics in 1777, and it is in this department that Professor Dietz gave the first lecture on "Viehharzneykunst" (the art of veterinary medicine). In 1785, the department closed but the teaching of veterinary medicine was continued by the medical faculty. The animal hospital, founded by K. W. Vix, was taken over by the university in 1829.

As part of the university's celebration, Dr. Dick Shope (M.D.), Princeton, N. J., and Dean Wahby, Veterinary College, Egypt, received honorary degrees.

Netherlands

International Scientific Film Association Will Hold Its Eleventh Congress.—The Eleventh International Scientific Film Association Congress will convene Sept. 21-27, 1957, at Biltstraat 168, Utrecht, Netherlands.

If further information is required, inquiries should be addressed to the Congress Secretariat, 59 Catharijnesingel, Utrecht, Netherlands.

U. S. GOVERNMENT

Veterinary Personnel Changes.—The following changes in the force of veterinarians in the U.S.D.A. are reported as of June 28 and July 5 and 10, 1957.

TRANSFERS

Roger A. Asplin, from St. Paul, Minn., to Pierre, S. Dak.

Edward R. Betlach, from Cheyenne, Wyo., to Bismarck, N. Dak.

Gordon W. Blake, from Salt Lake City, Utah, to Phoenix, Ariz.

Grant E. Blake, from Madison, Wis., to Des Moines, Iowa.

Le Roy V. Carlyle, from Honolulu, Hawaii, to St. Paul, Minn.

Hugh J. Clary, from Fort Dodge, Iowa, to Kansas City, Kan.

Cesar Clavell, from San Juan, Puerto Rico, to Sacramento, Calif.

Harold L. Geick, from St. Paul, Minn., to St. Joseph, Mo.

Howard H. Hall, from Columbus, Ohio, to Frankfort, Ky.

William D. Hoffmaster, from St. Joseph, Mo., to Fort Dodge, Iowa.

Elbert B. Jasper, from Topeka, Kan., to Trenton, N. J.

Joseph V. McAlpin, Jr., from Columbus, Ohio, to Frankfort, Ky.

Edward A. Schilf, from Columbia, S. Car., to Madison, Wis.

Glen O. Schubert, from St. Paul, Minn., to Topeka, Kan.

James M. Smylie, from Sacramento, Calif., to Reno, Nev.

Kenneth E. Taylor, from Lake Charles, La., to St. Paul, Minn.

William L. Wake, from Richmond, Va., to Montgomery, Ala.

Marion M. Williams, from Hebron, Ill., to Edgar, Wis.

RETIREMENTS

Glenn V. Grewell, Clarkston, Wash.
Nathan H. Howlett, Springfield, Ill.
Frank H. Hueben, Kansas City, Kan.
Austin J. Murphy, San Diego, Calif.
Samuel N. Myers, Jersey City, N. J.
Al C. Thrash, Charleston, W. Va.

DEATHS

William O. Ker, Edgar, Wis.
Eugene F. Pile, Frankfort, Ky.

• • •

Veterinarians Needed for Poultry Inspectors.—The Poultry Inspection Service of the U.S. D.A. needs qualified, graduate veterinarians to fill vacancies.

Effective July 1, 1957, veterinarians having less than one year professional experience will be employed as a trainee GS-7 at \$5,335 per annum. At the end of one year's service, the inspector is promoted to GS-9 at \$6,115 per annum. Veterinarians having at least one year's professional experience will be employed at \$6,115 a year.

No written examination is required. There are excellent opportunities for advancement. Veterinarians interested in part time or seasonal employment are invited to apply, as some plants operate on a seasonal basis.

The veterinarians interested in this program should write or wire the U.S.D.A., Agricultural Marketing Service, Inspection Branch, Poultry Division, in care of the following veterinarians listed, giving full information as to age, dependents, availability, location preferences, name of veterinary school, and the year graduated: Dr. J. R. Harney, Room 200, U. S. Custom House, Philadelphia 6; Dr. Wm. S. Buchanan, Room 1014, U. S. Custom House, Chicago 7; Dr. R. B. Mericle, Room 504, Iowa Building, Des Moines 9; Dr. Harry E. Gaskill, Room 333, Pacific Building, San Francisco 3.

DEATHS

Star indicates member of AVMA

★**Albin N. Muskovin** (COR '19), 60, Merrick, L.I., N.Y., died Jan. 19, 1957.

Dr. Muskovin was also a member of the N.Y. State Veterinary Medical Society and the Veterinary Medical Association of N.Y.C. at the time of his death.

John R. Shikles (WES '06), 82, Dearborn, Mo., died June 29, 1957, at the Macon, Mo. hospital. He was a lifelong resident of Platte County.

Dr. Shikles, a retired manufacturer of veterinary instruments, was a member of the Kansas City V.M.A., the Ararat Shrine Temple, the Temperance Masonic Lodge at Smithville, and the Eastern Star Chapter at Dearborn.

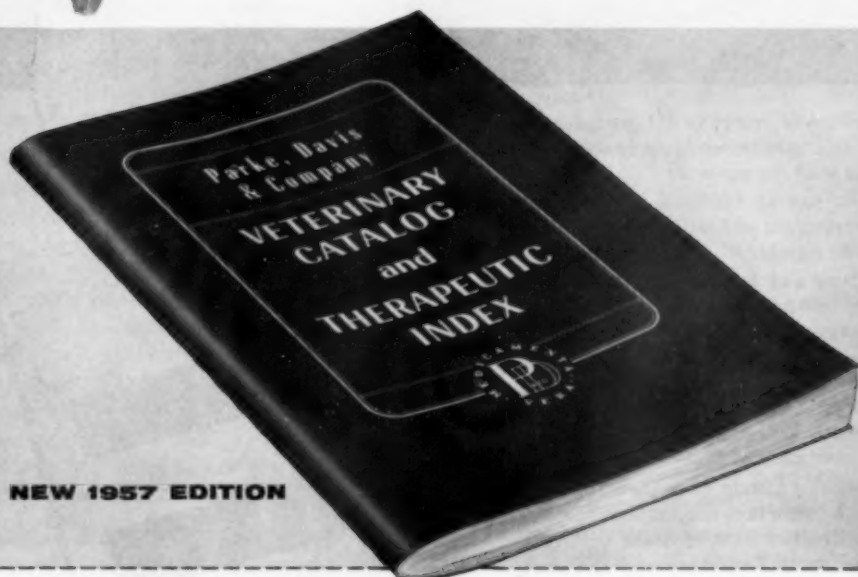
He is survived by a daughter, a brother, and five sisters.



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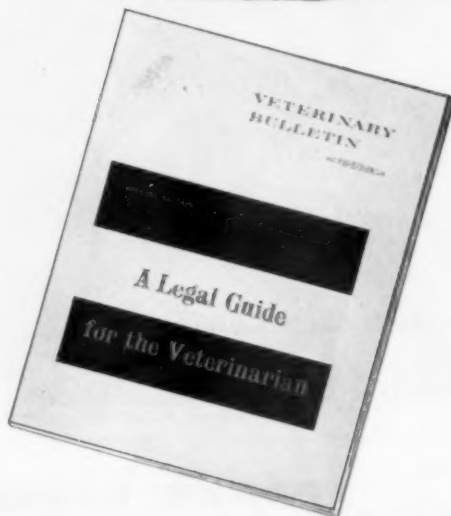
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bility, influences all body tissues by helping transmit nutrients through the cell wall. Methyltestosterone plays an equally important role in protein metabolism. Absence or inadequacy of androgen is believed to be responsible for loss of protein from all cells, muscle, and bone in the aged animal.

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APPLICATIONS

Applicants—Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative Bylaws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., the names of applicants residing within the jurisdictional limits of the constituent associations shall be published once in the JOURNAL.

The following applicants have been certified as members of the constituent association that has jurisdiction over the area in which the applicant resides. This certification was made by the secretary of the constituent association in accordance with Section 2, Article X, of the Administrative Bylaws.

- CARLSON, FOLKE W.
Box 87, Timnath, Colo.
D.V.M., Colorado State University, 1954
- MITCHELL, WILLIAM R.
44 Dunbarton Rd., Guelph, Ont.
D.V.M., Ontario Veterinary College, 1949.
- STABLER, WILLIAM L.
Box 163, Houston, Miss.
D.V.M., Alabama Polytechnic Institute, 1946.

Applicants—Not Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative Bylaws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., notice of all applications from applicants residing outside of the jurisdictional limits of the constituent associations, and members of the Armed Forces, shall be published in the JOURNAL for two successive months. The first notice shall give the applicant's full name, school, and year of graduation, post office address, and the names of his endorsers.

First Listing

- VEENSTRA, ROBERT J.
13401 Grenoble Dr., Rockville, Md.
D.V.M., Michigan State University, 1935.
Vouchers: R. M. Nims and T. J. Hage.

Graduate Applicants

The following are graduates who have recently received their veterinary degree and who have applied for AVMA membership under the provision granted in the Administrative Bylaws to members in good standing of student chapters. Applications from this year's senior classes not received in time for listing this month will appear in later issues. An asterisk (*) after the name of a school indicates that all of this year's graduates have made application for membership.

First Listing

University of California

- MASON, ROY E., JR., D.V.M.
Univ. of Calif. Veterinary Clinic, Davis, Calif.
Vouchers: Atwood C. Asbury and John D. Wheat.

University of Illinois

- ALLEN, BENTON C., JR., D.V.M.
Dunlap, Ill.
Vouchers: Ray D. Hatch and Bruce Brodie.

University of Pennsylvania

- DERSTINE, RICHARD D., V.M.D.
R.D. 2, Sellersville, Pa.
Vouchers: Edwin D. Tuckerman and Frank Kral.
- HOPKINS, ELAINE J., V.M.D.
Box 88, North Harwich, Mass.
Vouchers: James H. Mark and Charles W. Raker.

Texas A. & M. College

- WILLIAMS, BILLY R., D.V.M.
2202 Ave. K., Lubbock, Texas.
Vouchers: James C. Hart and Valton Cox.

Second Listing

University of California

- GALBREATH, DAVID A., D.V.M., 601 E. "I" St., Benicia, Calif.
- GOULD, THOMAS A., D.V.M., 167 Murray St., Chula Vista, Calif.
- HUR, DONALD E., D.V.M., 1511 5th St., Glendale, Calif.
- JOHNSTONE, HUBERT C., D.V.M., 7267 Pacific View Dr., Los Angeles, Calif.
- LINDSTROM, ROBERT A., D.V.M., 1234 N. Wilson Way, Stockton, Calif.
- PRIESTER, WILLIAM A., JR., D.V.M., 215 Lombardy Lane, Lemoore, Calif.
- WEST, ERIC J. D., D.V.M., P.O. Box 633, Davis, Calif.

University of Georgia

- FOSTER, DENNIS G., D.V.M., 3211 The Alameda, Baltimore, Md.
- VILDBILL, HARRY D., D.V.M., 930 Beltline Blvd., Columbia, S. Car.

University of Illinois

- MC KILKIN, STEPHEN E., D.V.M., Beecher, Ill.
- MEYER, DELWYN V., D.V.M., 227 Hollis St., Ke-wanee, Ill.
- SHORT, EDWIN W., D.V.M., R.R. 3, David Lane, Pleasure Ridge Park, Ky.

Michigan State University

- ALLEN, RICHARD J., D.V.M., R.R. 1, Ithaca, Mich.
- BANNINK, WAYNE E., D.V.M., Sparta, Mich.
- BLAKE, DONALD F., D.V.M., 2nd and Cutler Sts., Chippewa Lake, Mich.
- BORISENKO, OLEKS, D.V.M., 20563 Syracuse, Detroit, Mich.
- BRINKMAN, HERBERT A., D.V.M., R.R. 1, Caro, Mich.
- BROWN, HAROLD P., Jr., D.V.M., Bridge St., Richmond, Vt.
- BUTCHER, KENNETH R., D.V.M., Hart, Mich.
- CALENDER, JAMES E., D.V.M., 807 Birch Rd., East Lansing, Mich.
- CARR, ARWYN K., D.V.M., R.R. 3, Nixon Rd., Charlotte, Mich.
- CHAMBERS, WILLIAM K., D.V.M., Box 677, Mackinac Island, Mich.
- DIMMICK, GEORGE W., D.V.M., Portland, Ind.
- DUCHARME, DAVID P., D.V.M., 2554 W. Fond Du Lac, Milwaukee, Wis.
- DURRER, JOHN L., D.V.M., 1645 W. 8th St., Anderson, Ind.
- FIELD, WILLIAM E., D.V.M., Virginia Agricultural Experimental Station, Animal Pathology Laboratory, Blacksburg, Va.
- FORD, THOMAS M., D.V.M., 60 Maryland Dr., Battle Creek, Mich.
- FRITZ, THOMAS E., D.V.M., 3945 N. Maryland Ave., Milwaukee, Wis.
- GOING, ROBERT F., D.V.M., 731 Hinman Ave., Evanston, Ill.
- GRISWOLD, DONALD R., D.V.M., 25 Clover St., Kent City, Mich.
- HERRILD, ORLIN, D.V.M., Hwy. M-35, Menominee, Mich.
- HRUSKA, JAMES V., D.V.M., 700 N. Cass Lake Rd., Pontiac, Mich.
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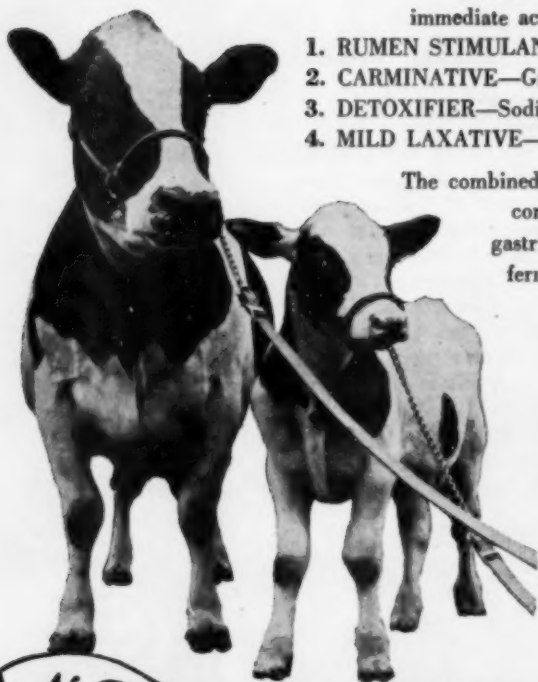
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1. Carter, G. R.: Canad. J. Comp. Med. Vet. Sc. 50:229 (August) 1946.

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References:

1. Martin, J. E., and Beck, J. D.: *Am. J. V. Res.* 17:678, 1956. 2. Troughton, S. E.; Gould, G. N., and Anderson, J. A.: *Veterinary Record* 67:903, 1955. 3. Brodey, R. S., and Thordal-Christensen, A.: *J.A.V.M.A.* 129:410, 1956. 4. Estrada, E., to be published.

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Aid in Breeding
In Convulsive Patients

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Aid in Oral Medication
Aid in Controlling Severe Pruritus
In Obstetrics
In Chorea Patients

Cat For Frightened or Unfriendly Patients
In Surgery
Aid in Hairball Therapy
Anti-emetic Effect

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In Tetanus Cases
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In Surgery

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COMING MEETINGS

University of Georgia. Annual short course for veterinarians, Sept. 16-17, 1957, College of Agriculture, Animal Disease Department, Tifton, Ga. Maurice W. Hale, Department of Animal Diseases.

Northern Illinois Veterinary Medical Association. Fall meeting. Rockford, Sept. 18, 1957. J. G. Hardenbergh, 121 Bridge Street, Rockton, Ill., secretary-treasurer.

South Dakota Veterinary Medical Association. Annual convention. Hotel Cataract, Sioux Falls, Sept. 19-20, 1957. J. L. Noorday, Marion, S. Dak., secretary.

District of Columbia Veterinary Medical Association. Third annual all-day meeting. Sternberg Auditorium, Walter Reed Army Medical Center, Oct. 1, 1957. Wm. I. Gay, 5200 Chandler St., Bethesda 14, Md., secretary.

New England Veterinary Medical Association. Annual meeting. Equinox House, Manchester, Vt., Oct. 6-9, 1957. C. Lawrence Blakely, 180 Longwood Ave., Boston, Mass., secretary.

Purdue University. Annual short course for veterinarians. Purdue University, West Lafayette, Ind., Oct. 9-11, 1957. L. M. Hutchings, secretary.

Florida State Veterinary Medical Association. Annual meeting. Fort Harrison Hotel, Clearwater, Oct. 13-15, 1957. Robert P. Knowles, 2101 N.W. 25th Ave., Miami 42, Fla., secretary.

University of Missouri. Annual short course for graduate veterinarians, Oct. 14-15, 1957, School of Veterinary Medicine, University of Missouri, Columbia. Cecil Elder, chairman.

Pennsylvania State Veterinary Medical Association. Annual meeting. Hotel Brunswick, Lancaster, Oct. 16-18, 1957. Raymond C. Snyder, N. W. Corner Walnut St. and Copley Rd., Upper Darby, secretary.

Texas Veterinary Medical Association. Annual meeting. Baker Hotel, Dallas, Oct. 16-18, 1957. Paul B. Blunt, 712 Maverick Bldg., San Antonio, Texas, secretary.

Eastern Iowa Veterinary Association. Annual meeting. Hotel Sheraton-Montrose, Cedar Rapids, Oct. 17-18, 1957. F. E. Brutsman, Traer, Iowa, secretary.

Illinois, University of. Annual veterinary conference and short course. School of Veterinary Medicine, University of Illinois, Urbana, Oct. 17-18, 1957. L. E. Boley, chairman.

Southern Veterinary Medical Association. Annual meeting. Hotel Roanoke, Roanoke, Va., Oct. 27-30, 1957. A. A. Husman, P. O. Box 91, Raleigh, N. Car., secretary.

Cornell University. Nutrition conference. Cornell University, Ithaca, N.Y., Oct. 31-Nov. 1, 1957. J. K. Loois, Stocking Hall, Cornell University, Ithaca, N.Y., chairman.

Interstate Veterinary Medical Association. Annual meeting. Martin Hotel, Sioux City, Iowa, Nov. 7-8, 1957. K. W. Smith, 1002 3-4th St., Sioux City, Iowa, secretary.

Animal Care Panel. Annual meeting. Bellevue Hotel, San Francisco, Calif., Nov. 7-9, 1957. R. J. Flynn, Box 299, Lemont, Ill.

Pennsylvania, University of. Annual conference for veterinarians. School of Veterinary Medicine, Philadelphia, Jan. 7-8, 1958. M. W. Allam, dean.

Cornell University. Annual conference for veterinarians. New York State Veterinary College, Ithaca, Jan. 8-10, 1958. W. A. Hagan, dean.

Kansas Veterinary Medical Association. Annual convention. Hotel Broadview, Wichita, Jan. 12-14, 1958. K. Maynard Curtis, 5236 Delmar Ave., Kansas City 3, Kan., secretary.

Iowa Veterinary Medical Association. Annual meeting. Hotel Fort Des Moines, Des Moines, Jan. 14-16, 1958. F. B. Young, Wauke, Iowa, secretary.

Intermountain Veterinary Medical Association. Annual meeting. Hotel Utah, Salt Lake City, Jan. 16-18, 1958. R. A. Bagley, 4600 Creek View Dr., Murray, Utah, secretary.

Minnesota Veterinary Medical Association. Annual meeting. St. Paul, Jan. 20-22, 1958. B. S. Pomeroy, School of Veterinary Medicine, University of Minnesota, St. Paul 1, Minn.

North Carolina State College. Conference for veterinarians. North Carolina State College, Raleigh, Jan. 28-31, 1958. C. D. Grinnells, chairman.

Oregon Veterinary Medical Association. Winter meeting. Portland, Jan. 31-Feb. 1, 1958. Edward L. Holden, P. O. Box 445, Oswego, secretary.

Foreign Meetings

Seventh Brazilian Congress of Veterinary Medicine. Recife, Pernambuco, Brazil, Oct. 12-19, 1957. Dr. Valdi Moreira Martins, Caixa Postal 2505, Recife, secretary-general.

Regularly Scheduled Meetings

ALABAMA—Central Alabama Veterinary Association, the first Thursday of each month. B. M. Lauderdale, Montgomery, secretary.

Jefferson County Veterinary Medical Association, the second Thursday of each month. S. A. Price, 213 N. 15th St., Birmingham, secretary.

Mobile-Baldwin Veterinary Medical Association, the third Tuesday of each month. W. David Gross, 771 Holcombe Ave., Mobile, Ala., secretary.

ARIZONA—Central Arizona Veterinary Medical Association, the second Tuesday of each month. Keith T. Maddy, Phoenix, Ariz., secretary.

Southern Arizona Veterinary Medical Association, the third Wednesday of each month at 7:30 p.m. E. T. Anderson, Rt. 2, Box 697, Tucson, Ariz., secretary.

CALIFORNIA—Alameda-Contra Costa Veterinary Medical Association, the fourth Wednesday of Jan., March, May, June, Aug., Oct., and Nov. Leo Goldston, 5793 Broadway, Oakland 11, Calif., secretary.

Bay Counties Veterinary Medical Association, the second Tuesday of February, April, July, September, and December at 5004 16th St., San Francisco, Calif. Mr. Herb Warren, executive secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. R. B. Barsaleau, 2333 E. Mineral King, Visalia, Calif., secretary.

Kern County Veterinary Medical Association, the first Thursday evening of each month. A. L. Irwin, 301 Taft Highway, Bakersfield, Calif., secretary.

Mid-Coast Veterinary Medical Association, the first Thursday of every even month. W. H. Rockey, P. O. Box 121, San Luis Obispo, Calif., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. Lewis J. Campbell, 90 Corral de Tierra, Salinas, Calif., secretary.

North San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month at the Hotel Covell, in Modesto, Calif. Lyle A. Baker, Turlock, Calif., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month. Chester A. Maeda, 766 E. Highland Ave., San Bernardino, Calif., secretary.

Orange County Veterinary Medical Association, the third Thursday of each month. Donald E. Lind, 2643 N. Main St., Santa Ana, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. R. C. Lawton, 4040 El Camino, Palo Alto, Calif., secretary.

Redwood Empire Veterinary Medical Association, the third Thursday of each month. Robert E. Clark, Napa, Calif., secretary.

Sacramento Valley Veterinary Medical Association, the second Wednesday of each month. W. E. Steinmetz, 4227 Freepoint Blvd., Sacramento, Calif., secretary.

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San Fernando Valley Veterinary Medical Association, the second Friday of each month at the Casa Escobar Restaurant in Studio City. John Chudacoff, 7912 Sepulveda Blvd., Van Nuys, secretary.

Santa Clara Valley Veterinary Association, the fourth Tuesday of each month. Kay Beulley, N. Fourth and Gish Rd., San Jose, Calif., secretary.

Southern California Veterinary Medical Association, the last Wednesday of each month. Don Mahan, 1919 Wilshire Blvd., Los Angeles 57, Calif., executive secretary.

Tulare County Veterinarians, the second Thursday of each month. R. B. Barsaleau, 2333 E. Mineral King, Visalia, Calif., secretary.

COLORADO—Denver Area Veterinary Society, the fourth Tuesday of every month. Richard C. Tolley, 5060 S. Broadway St., Englewood, Colo., secretary.

Northern Colorado Veterinary Medical Society, the first Monday of each month. M. A. Hammartund, School of Veterinary Medicine, Colorado A. & M. College, Fort Collins, Colo., secretary.

DELAWARE—New Castle County Veterinary Association, the first Tuesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. E. J. Hathaway, Clifton Park Manor, Apt. 73-5, Wilmington 2, Del., secretary.

FLORIDA—Central Florida Veterinary Medical Association, the first Tuesday of each month, time and place specified monthly. Jack H. McElyer, 5925 Edgewater Drive, Orlando, Fla., secretary.

Florida West Coast Veterinary Medical Association, the second Wednesday of each month at the Lighthouse Inn, in St. Petersburg. R. L. Brutus, 336 E. 15th St., Hialeah, Fla., secretary.

Jacksonville Veterinary Medical Association, the first Thursday of every month. Dodsons Restaurant, P. S. Roy, 4443 Atlantic Blvd., Jacksonville, Fla., secretary.

Northwest Florida Veterinary Medical Society, third Wednesday of each month, time and place specified monthly. T. R. Geci, 108B Catherine Ave., Pensacola, Fla., secretary.

Palm Beach Veterinary Society, the last Thursday of each month in the county office building at 810 Datura St., West Palm Beach. J. J. McCarthy, 500-25th Street, West Palm Beach, Fla., secretary.

Ridge Veterinary Medical Association, the fourth Thursday of each month in Bartow, Fla. Paul J. Myers, Winter Haven, Fla., secretary.

South Florida Veterinary Society, the third Wednesday of each month. Time and place specified monthly. Frank Mueller, Jr., 4148 E. 8th Ave., Hialeah, Fla., secretary.

Suwannee Valley Veterinary Association, the fourth Tuesday of each month, Hotel Thomas, Gainesville. W. B. Martin, Jr., 3002 N. W. 6th St., Gainesville, Fla., secretary.

Volusia County Veterinary Medical Association, the fourth Thursday of each month. A. E. Hixon, 131 Mary St., Daytona Beach, Fla., secretary.

GEORGIA—Atlanta Veterinary Society, the second Tuesday of every month at the Elks Home on Peachtree St., Atlanta, Ga. J. L. Christopher, Smyrna, Ga., secretary.

ILLINOIS—Chicago Veterinary Medical Association, the second Tuesday of each month. Mark E. Davenport, Jr., 215 S. Edgewood Ave., LaGrange, Ill., secretary.

Eastern Illinois Veterinary Medical Association, the first Thursday of March, June, September, and December. A one-day clinic is held in May. H. S. Bryan, College of Veterinary Medicine, University of Illinois, Urbana, secretary.

INDIANA—Central Indiana Veterinary Medical Association, the second Wednesday of each month. Peter Johnson, Jr., 4410 N. Keystone Ave., Indianapolis 5, secretary.

Michiana Veterinary Medical Association, the second Thursday of every month except July and December, at the Hotel LaSalle, South Bend, Ind. J. M. Carter, 3421 S. Main St., Elkhart, Ind., secretary.

Tenth District Veterinary Medical Association, the third Thursday of each month. J. S. Baker, P. O. Box 52, Pendleton, Ind., secretary.

IOWA—Cedar Valley Veterinary Association, the second Monday of each month, except January, July, August, and October, at Black's Tea Room, Waterloo, Iowa. H. V. Henderson, Reinbeck, Iowa, secretary.

Coon Valley Veterinary Association, the second Wednesday of each month, September through May, at the Bradford Hotel, Storm Lake, Iowa. D. I. Lee, Sac City, Iowa, secretary.

East Central Iowa Veterinary Medical Society, the second Tuesday of every month. Dr. W. T. Rugger, Oxford, secretary.

Fayette County Veterinary Association, the third Tuesday of each month, except in July and August, at Pa and Ma's Restaurant, West Union, Iowa. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Northeast Iowa-Southern Minnesota Veterinary Association, the first Tuesday of February, May, August, and November at the Wisneslick Hotel, Decorah, Iowa, 6:30 p.m. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

KANSAS—Kansas City Veterinary Medical Association and Kansas City Small Animal Hospital Association, the third Tuesday of each month. Robert E. Guilfoil, 18 N. 2nd St., Kansas City 18, Kansas, secretary.

KENTUCKY—Central Kentucky Veterinary Medical Association, the first Wednesday of each month. L. S. Shirrell, Versailles Rd., Frankfort, secretary.

Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday evening of each month in Louisville or within a radius of 50 miles. W. E. Bewley, P.O. Box "H," Crestwood, secretary.

MARYLAND—Baltimore City Veterinary Medical Association, the second Thursday of each month, September through May (except December), at 9:00 p.m. at the Park Plaza Hotel, Charles and Madison St., Baltimore, Md. Harry L. Schultz, Jr., 9011 Harford Rd., Baltimore, Md., secretary.

MICHIGAN—Mid-State Veterinary Medical Association, the fourth Thursday of each month with the exception of November and December. Robert E. Kader, 5034 Armstrong Rd., Lansing 17, Mich., secretary.

Saginaw Valley Veterinary Medical Association, the last Wednesday of each month. S. Correll, Rt. 1, Midland, Mich., secretary.

Southeastern Veterinary Medical Association, the fourth Wednesday of every month, September through May. Gilbert Meyer, 14003 E. Seven Mile Rd., Detroit 5, Mich., secretary.

MISSOURI—Greater St. Louis Veterinary Medical Association, the first Friday of each month (except July and August), at the Coronado Hotel, Lindell Blvd. and Spring Ave., St. Louis, Mo., at 8 p.m. Chester R. Pledge, 4249 Peck St., St. Louis 7, Mo., secretary.

Kansas City Veterinary Medical Association and Kansas City Small Animal Hospital Association, the third Tuesday of each month. Robert E. Guilfoil, 18 N. 2nd St., Kansas City 18, Kansas, secretary.

NEW JERSEY—Central New Jersey Veterinary Medical Association, the second Thursday of November, January, March, and May at Old Hights Inn, Hightstown, N. J. David C. Tudor, Cranbury, N. J., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from October through April at the Academy of Medicine, 91 Lincoln Park South, Newark, N. J. Myron S. Arlein, 2172 Milburn Ave., Maplewood, N. J., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday of each month at the Casa Mana in Teaneck. James R. Tanzola, Upper Saddle River, secretary.

Northwest Jersey Veterinary Society, the third Wednesday of every odd month. G. R. Muller, 43 Church St., Lambertville, N. J., secretary.



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Make your diagnosis from the picture below—then turn the page ►

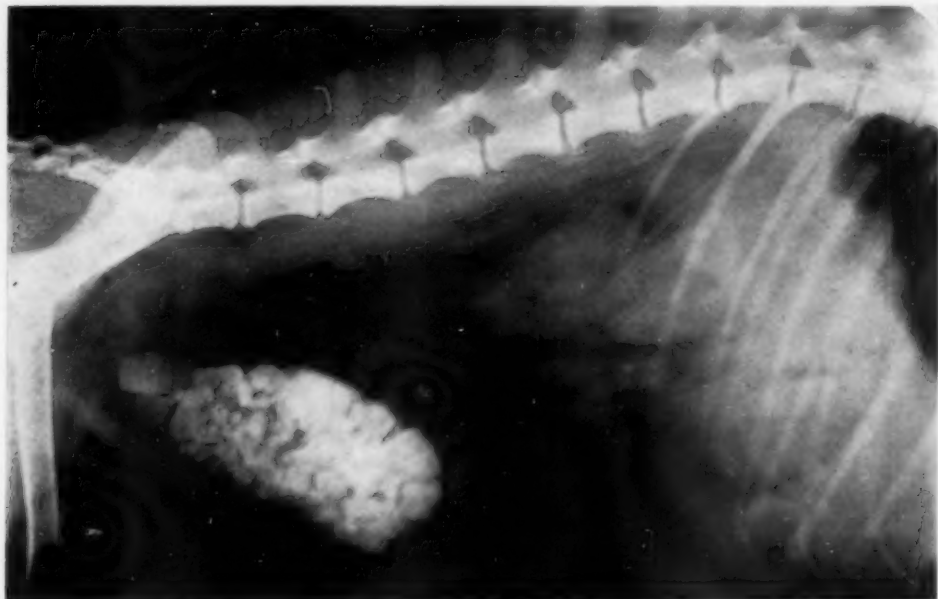


Figure 1

History.—A spayed mixed Terrier, 8 years old, showed signs of urinary bladder discomfort. She frequently strained in an attempt to urinate, but usually voided only a few drops of urine which was sometimes stained with blood. A grating, rough mass could be palpated in the urinary bladder region. The animal was properly prepared and a radiograph was taken.

Here Is the Diagnosis

(Continued from preceding page)

Diagnosis.—Calculi in the urinary bladder of a dog.

Comment.—The diagnosis of this case by means of the radiograph offers no problem. The excellent radiograph distinctly shows

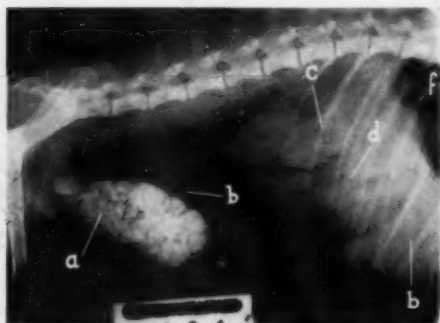


Fig. 2.—Radiograph, lateral view, lateral recumbent position showing (a) calculi in the urinary bladder; (b) thickened bladder wall; (c) kidneys; (d) stomach; (e) liver; and (f) diaphragm.

the calculi, the skeletal structures, and the soft organs. It is published with the hope that it will encourage practitioners to prepare the patient carefully and to perfect a technique that will secure good quality

radiographs. A suggested technique follows:

Food should be withheld and a laxative given 12 hours before the picture is taken. An enema may be given if the laxative is not effective. The radiograph may be a lateral view with the animal in a lateral recumbent or standing position, or it may be a ventral view with the animal in a dorsal recumbent position. Various mediums such as air, organic iodine, and barium may be employed to delineate the various organs. An opaque catheter or sound introduced into the digestive or urinary tracts often aids in the identification of organs. In addition, good restraint of the animal, proper use of the x-ray machine, and processing of the films are all essential if satisfactory results are to be obtained. Expensive equipment does not insure good radiographs.

Our readers are invited to submit case histories, radiographs, and diagnoses of interesting cases which are suitable for publication.

This radiograph was submitted by the Small Animal Department, School of Veterinary Medicine, University of Illinois, Urbana.

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(tissue culture origin)



* superior antigens of cellular origin

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Southern New Jersey Veterinary Medical Association, the third Tuesday of each month at the Collingswood Veterinary Hospital, Collingswood. W. E. Snyder, E. Kings Highway and Munn Ave., Haddonfield, secretary.

NEW YORK—New York City, Inc., Veterinary Medical Association of, the first Wednesday of each month at the New York Academy of Sciences, 2 East 63rd St., New York City. C. E. DeCamp, 43 West 61st St., New York 23, N. Y., secretary.

New York State Veterinary College. Annual conference for veterinarians. Cornell University, Ithaca. W. A. Hagan, New York State Veterinary College, Cornell University, Ithaca, N. Y., dean.

Monroe County Veterinary Medical Association, the first Thursday of even-numbered months except August. Irwin Bircher, 50 University Ave., Rochester, N. Y., secretary.

NORTH CAROLINA—Central Carolina Veterinary Medical Association, the second Wednesday of each month at 7:00 p.m. in the O'Henry Hotel, Greensboro. Joseph A. Lombardo, 411 Woodlawn Ave., Greensboro, secretary.

Eastern North Carolina Veterinary Medical Association, the first Friday of each month, time and place specified monthly. Byron H. Brow, Box 453, Goldsboro, N. Car., secretary.

Piedmont Veterinary Medical Association, the last Friday of each month. John G. Martin, Boone, N. Car., secretary.

Twin Carolinas Veterinary Medical Association, the third Thursday of each month in the Orange Bowl Restaurant, Rockingham, N. Car., at 7:30 p.m. James R. Burgess, Rockingham, N. Car., secretary.

OHIO—Cuyahoga County Veterinary Medical Association, the first Wednesday of each month, September through

May (except January), at 9:00 p.m. at the Carter Hotel, Cleveland, Ohio. Ed. R. Jacobs, 5522 Pearl Rd., Cleveland, Ohio, secretary.

Stark County Veterinary Association, the second Monday of each month. M. L. Willen, 4423 Tuscarawas St., Canton, Ohio, secretary.

OKLAHOMA—Oklahoma County Veterinary Medical Association, the second Wednesday of every month, 7:30 p.m., Patrick's Foods Cafe, 1016 N.W. 23rd St., Oklahoma City. Forrest H. Stockton, 2716 S.W. 29th St., Oklahoma City, Okla., secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month in Directors' Parlor of the Brookside State Bank, Tulsa, Okla. Don L. Hohmann, 538 S. Madison St., Tulsa, Okla., secretary.

PENNSYLVANIA—Del-High Veterinary Medical Association, the first Thursday of each month. Stewart Rockwell, 10th and Chestnut Sts., Emmaus, Pa., secretary.

Keystone Veterinary Medical Association, the fourth Wednesday of each month at the University of Pennsylvania School of Veterinary Medicine, 39th and Woodland Ave., Philadelphia 4, Pa. Raymond C. Snyder, 39th and Woodland Ave., Philadelphia 4, Pa., secretary.

SOUTH CAROLINA—Piedmont Veterinary Medical Association, the third Wednesday of each month at the Fairforest Hotel, Union, S. Car. Worth Lanier, York, S. Car., secretary.

TEXAS—Coastal Bend Veterinary Association, the second Wednesday of each month. J. Marvin Prewitt, 4141 Lexington Blvd., Corpus Christi, Texas, secretary.

VIRGINIA—Central Virginia Veterinarians' Association, the third Thursday of each month at the William Byrd Hotel in Richmond at 8:00 p.m. M. R. Levy, 512 W. Cary St., Richmond 20, Va., secretary.



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Northern Virginia Veterinary Society, the second Wednesday of every third month. Meeting place announced by letter. H. C. Newman, Box 145, Merrifield, secretary.

Southwest Virginia Veterinary Medical Association, the first Thursday of each month. I. D. Wilson, Blacksburg, secretary.

WASHINGTON—Seattle Veterinary Medical Association, the third Monday of each month, Magnolia American Legion Hall, 2870 32nd W., Seattle, Wash. William S. Green, 9637 S. E. 36th, Mercer Island, Wash., secretary.

South Puget Sound Veterinary Association, the second Thursday of each month except July and August. O. I. Bailey, P. O. Box 906, Olympia, Wash., secretary.

WEST VIRGINIA—Kyowva (Ky., Ohio, W. Va.) Veterinary Medical Association, the second Thursday of each month in the Hotel Prichard, Huntington, W. Va., at 8:30 p.m. Harry J. Fallon, 280 5th St., W. Huntington, W. Va., secretary.

Central Wisconsin Veterinary Medical Association, the second Tuesday of each quarter (March, June, Sept.,

Dec.). R. J. O'Hern, P. O. Box 617, Cumberland, Wis., secretary.

Dane County Veterinary Medical Association, the second Thursday of each month. Dr. E. P. Pope, 409 Farley Ave., Madison, Wis., secretary.

WISCONSIN—Milwaukee Veterinary Medical Association, the third Tuesday of each month, at the Hall-Way House, Blue Mound Rd. Dr. R. H. Steinkraus, 7701 N. 59th St., Milwaukee, Wis., secretary.

Northeastern Wisconsin Veterinary Medical Association, the third Wednesday in April. William Madison, 218 E. Washington St., Appleton, Wis., secretary.

Rock Valley Veterinary Medical Association, the first Wednesday of each month. W. E. Lyle, P. O. Box 107, Deerfield, Wis., secretary.

Southeastern Veterinary Medical Association, the third Thursday of each month. John R. Curtis, 419 Cook St., Portage, Wis., secretary.

Wisconsin Valley Veterinary Medical Association, the second Tuesday of every other month. E. S. Scobell, Rt. 2, Wausau, Wis., secretary.

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(Classified ads continued on page 52)

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REFERENCES: 1. Bull, W. S.; N. Amer. Vet., in press. 2. Henry, R. T., and Blackburn, E. G.; Vet. Med., in press.

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*Jones, S. V.; Belloff, G. B., and Roberts, H. D. B.: Vet. Med. 51:413 (Sept.) 1956.

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(Continued on p. 54)

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 tice in Midwestern city. Single man preferred. Living
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 cellent schools. Address "Box P 37," c/o JOURNAL
 of the AVMA.

Kansas graduate, 1955, married, desires position
 in small animal practice in Midwest or West.
 Military obligation recently completed. Address "Box
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 Australian mammal, a marsupial like the
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 lowish, pointed quills, 2 inches long. It is
 an anteater with no teeth, a hardened
 snout, a long sticky tongue to collect ants,
 and strong digging limbs armed with claws
 to demolish an anthill. It is practically un-
 known, even in Australia.—*Our Dumb*
Anim. (May, 1957): 8.

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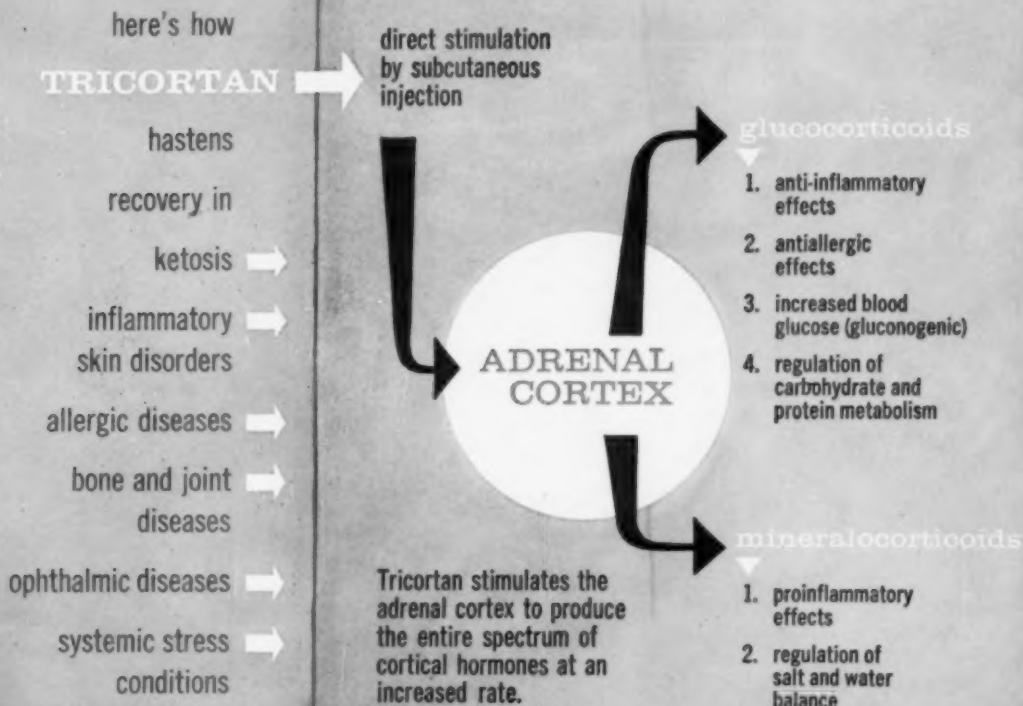
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